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SISTEMA D'AEROGENERACIÓ SOTERRAT

Annexos

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Pro Weather Station
Model: WMR86 / WMR86A

USER MANUAL

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EN

INTRODUCTION

Thank you for selecting the Oregon Scientific™ Weather Station (WMR86 / WMR86A).

The base station is compatible with other sensors. To purchase additional sensors, please contact your local retailer.

Sensors with this logo 3.0 are compatible with this unit.

NOTE Please keep this manual handy as you use your new product. It contains practical step-by-step instructions, as well as technical specifications and warnings you should know about.

PACKAGING CONTENTS

BASE STATION

1 x Base Station

3 x AA UM-3
1.5V batteries

WIND SENSOR

1 x Wind Sensor (1 x Wind Vane Above and 1 x Anemometer Below)

1 x sensor connector

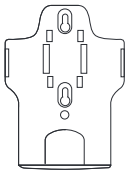
2 x AA UM-3
1.5V batteries

4 x Screws
(Type A)

1 x Round
U- bolt

TEMPERATURE & HUMIDITY SENSOR

1 x Temperature / Humidity Sensor



1 x wall mount bracket

1 x Table stand

2 x AAA UM-4
1.5V battery

RAIN GAUGE

1 x Rain Collector

4 x Screws (Type B)

2 x AA UM-3 1.5V batteries

6 x Washers

ACCESSORIES - SENSORS

This product can work with up to 3 sensors at any one time to capture outdoor temperature, relative humidity or UV readings in various locations.

Optional wireless remote sensors such as those listed below can be purchased separately. For more information, please contact your local retailer.*

- Solar Panel STC800 connectable to Wind Sensor and Temperature / humidity sensor
- Thermo-hygro THGR800 (3-Ch)
- Thermo-hygro THGR810 (10-Ch)
- UV UVN800
- Pool sensor THWR800

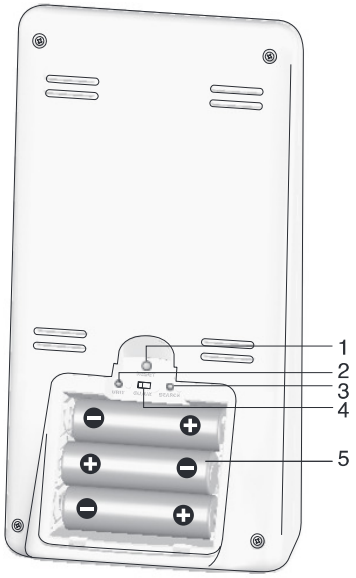
**** Features and accessories will not be available in all countries.***

OVERVIEW

FRONT VIEW

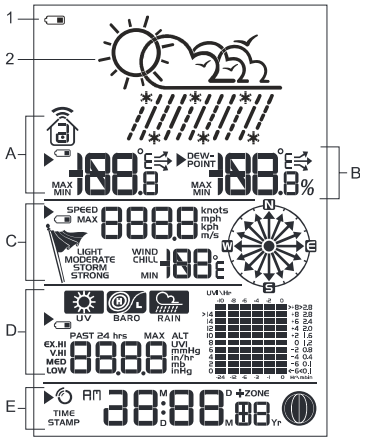
1. **MODE**: Switch between the different display modes / settings; set clock; set altitude; activate autoscan
2. **MAX/MIN**: Read the max / min memory readings; clear readings
3. **SELECT**: Switch between the different areas
4. **LIGHT**: Activate backlight
5. ▲ / ▼ : Increase / decrease values of the selected setting; toggle between indoor / outdoor channels

BACK VIEW



1. **RESET**: Returns unit to default settings
2. **UNIT**: Select unit of measurement
3. **SEARCH**: Searches for sensors or for the radio-controlled clock signal
4. **EU / UK** switch: Select the nearest radio signal (WMR86 only)
5. Battery compartment

LCD DISPLAY



1. : Main unit battery low
2. Weather forecast

A. Temperature Area
B. Humidity / Dew Point Area
C. Wind Speed / Wind Direction / Wind Chill Area
D. UVI / Barometer / Rainfall Area
E. Clock / Calendar / Moon Phase Area

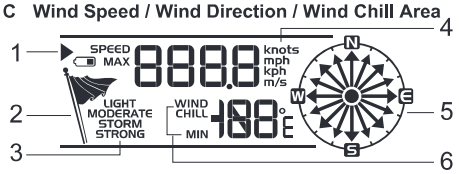
A Temperature Area

1. Indoor / Outdoor channel temperature and humidity is displayed
2. Outdoor sensor battery is low
3. Selected area icon
4. MAX / MIN temperature is displayed
5. Temperature trend
6. Temperature reading (°C / °F)

B Humidity / Dew Point Area

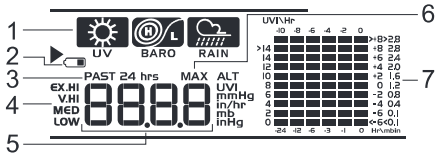
1. Dew point level – Temperature is displayed
2. MAX / MIN humidity / dew point level is displayed
3. Humidity trend
4. Humidity reading

C Wind Speed / Wind Direction / Wind Chill Area



1. Selected area icon
2. Wind speed level indicator
3. Wind speed level description
4. Wind speed reading (m/s, kph, mph or knots)
5. Wind direction display
6. Minimum wind chill is displayed

D UVI / Barometer / Rainfall Area

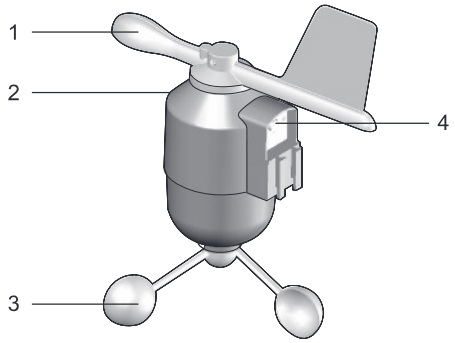


1. UVI / barometer / rainfall reading is displayed
2. Outdoor UV / rain sensor battery is low
3. Past 24hrs rainfall is displayed
4. UVI level indicator
5. UVI / barometric pressure (mmHg, inHg or mb) / rainfall readings (in or mm) for the current hour
6. Maximum UV is displayed
7. UVI / barometric pressure / rainfall historical bar chart display

E Clock / Calendar / Moon Phase Area

1. Clock signal reception indicator
2. Timestamp is displayed
3. Time zone offset
4. Moon phase
5. Time / date / calendar

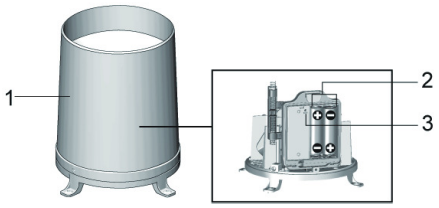
WIND SENSOR



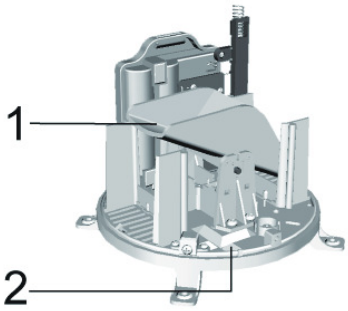
1. Wind direction
2. Wind vane casing
3. Anemometer
4. Solar power socket

RAIN GAUGE

Base and funnel:

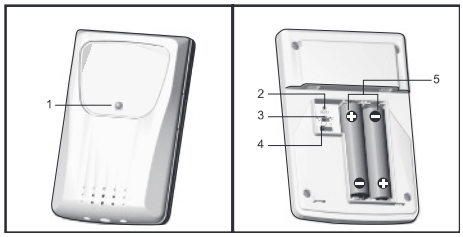


1. Rain gauge
2. Battery compartment
3. **RESET** button



1. Funnel
2. Indicator

OUTDOOR TEMPERATURE / HUMIDITY SENSOR



1. LED status indicator
2. **RESET** hole
3. **°C / °F:** Select temperature unit
4. **CHANNEL** switch
5. Battery compartment

GETTING STARTED

NOTE Install batteries in the remote sensors before the base station matching the polarities (+ and -).

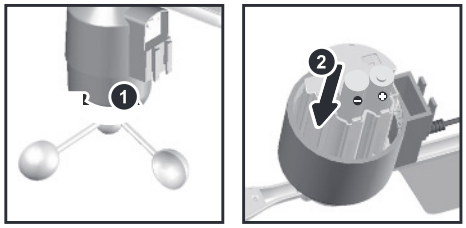
NOTE Use alkaline batteries for longer usage and consumer grade lithium batteries in temperatures below freezing.

SET UP REMOTE WIND SENSOR

The wind sensor takes wind speed and direction readings.

The sensor is battery operated. It is capable of transmitting data to the base station wirelessly within an approximate operating range of 100 meters (328 feet).

To insert batteries:



1. Unscrew the anemometer from the wind sensor carefully.
2. Insert batteries matching the polarities (+ / -) and replace the anemometer. Press **RESET** after each battery change.

SET UP REMOTE TEMPERATURE / HUMIDITY SENSOR

The remote sensor can collect data from up to 3 channels.

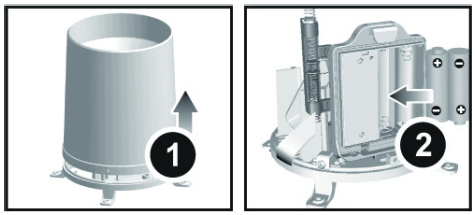
To set up the remote sensor:

1. Slide open the battery door.
2. Slide channel switch to select a channel (1, 2, 3). Ensure you use a different channel for each sensor.
3. Insert the batteries, matching the polarities (+ / -).
4. Press **RESET** after each battery change.
5. Close the battery door.

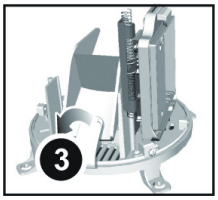
SET UP RAIN GAUGE

The rain gauge collects rain and takes rainfall readings. The sensor can remotely transmit data to the base station.

To set up the rain gauge:



1. Remove screws and slide the cover off in an upwards motion.
2. Insert the batteries (2 x UM-3 / AA), matching the polarities (+ / -). Press **RESET** after each battery change.

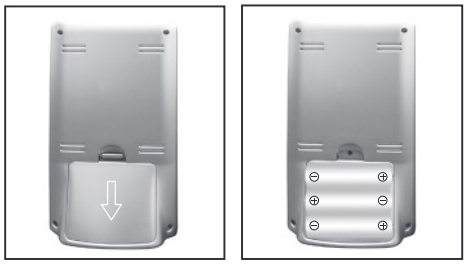


3. Remove the fibre tape.

SET UP BASE STATION

NOTE Install batteries in the remote sensors before the base station matching the polarities (+ and -).

1. Slide open the battery door.



2. Insert the batteries, matching the polarities (+ / -).
3. Press **RESET** after each battery change.
4. Close the battery door.

NOTE Do not use rechargeable batteries. It is recommended that you use alkaline batteries with this product for longer performance.

NOTE Batteries should not be exposed to excessive heat such as sunshine or fire.

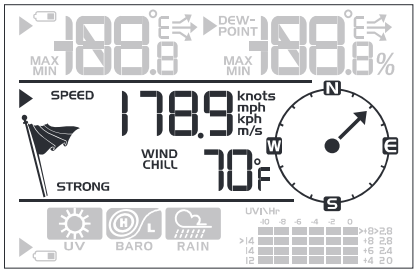
The battery icon indicator may appear in the following areas:

AREA	MEANING
Weather Forecast Area	Battery in the base station is low.
Temperature or Humidity Area	The displayed channel indicates the outdoor sensor for which battery is low.
Wind Speed / Wind Direction / Wind Chil Area	Battery in the wind sensor is low.
UVI / Barometer / Rainfall Area	Battery in the UV / Rain sensor is low.

VERIFY CONNECTION

Before proceeding to install sensors outside, please verify communication to the base station.

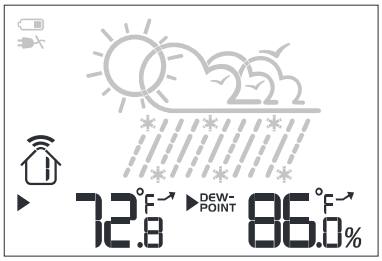
WIND SENSOR



Press **SELECT** until the selected area icon ▶ is in the middle display area.

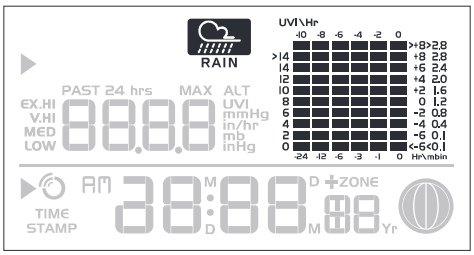
- Wind speed: Gently rotate the wind vane and confirm a numerical reading on the base station, e.g., 178.9.
- Wind direction indicator. Move the direction of the wind indication and verify the icon moves in the same direction.

TEMPERATURE / HUMIDITY SENSOR



1. Press **SELECT** until the selected area icon ▶ is in the upper display area.
2. Press ▲ / ▼ to select channel 1 and verify a numerical reading.

RAIN GAUGE



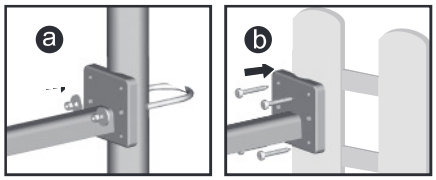
1. Press **SELECT** until the selected area icon ▶ is in the lower display area.
2. Press **MODE** until RAIN is displayed.
3. Tilt the tipping funnel on the rain gauge several times and verify a numerical reading on the base station.

TIP If no reading is displayed for a sensor, press the **SEARCH** button on the base station to initiate a wireless sensor search.

MOUNTING / PLACING OF SENSORS

WIND SENSOR

NOTE The sensor should be positioned in an open area away from trees or other obstructions.



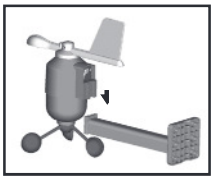
Secure the sensor connector in the desired location:

a. Align the back of the sensor connector to an existing pole. Secure in place by inserting the ends of the U-bolt into the holes on the sensor connector and securing it with washers and bolts.

OR

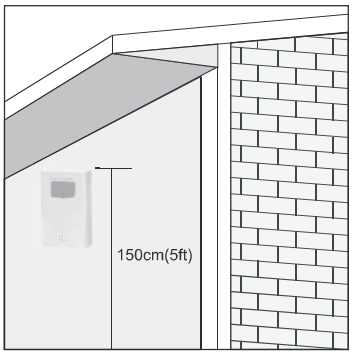
b. Insert 4 type A screws into the holes of the sensor connector. Screw firmly into place, i.e., fence.

Slide wind vane onto the smaller end of the sensor connector.

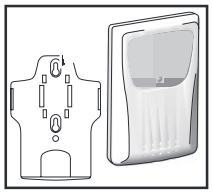


IMPORTANT Ensure that the wind sensor is pointing North to enable it to record accurate readings.

TEMPERATURE / HUMIDITY SENSOR



TIP Ideal placements for the sensor would be in any location on the exterior of the home at a height of not more than 1.5 m (5 ft) and which can shield it from direct sunlight or wet conditions for an accurate reading.



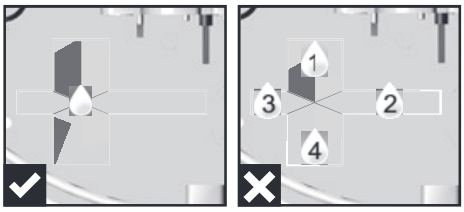
Secure the sensor in the desired location using the wall mount bracket or table stand.

RAIN GAUGE

The base station and rain gauge should be positioned within an effective range: about 100 meters (328 feet) in an open area.

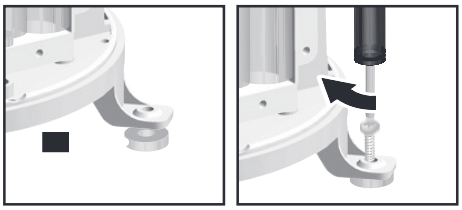
The rain gauge should be mounted horizontally about 1 meter (3 feet) from the ground in an open area away from trees or other obstructions to allow rain to fall naturally for an accurate reading.

To ensure a level plane:
Put a few drops of water on the cross at the base of the funnel to check the horizontal level.



Water will pool to the center of the cross when the rain gauge is level.

If water remains on 1-4, the gauge is not horizontal.
If necessary, adjust the level using the screw.



NOTE For best results, ensure the base is horizontal to allow maximum drainage of any collected rain.

TIP Press **RESET** button on base station to erase all testing data.

CLOCK RECEPTION

This product is designed to synchronize its calendar clock automatically once it is brought within range of a radio signal:

WMR86:

- EU: DCF-77 signal: within 1500 km (932 miles) of Frankfurt, Germany.
- UK: MSF-60 signal: within 1500 km (932 miles) of Anthorn, England.

WMR86A:

- WWVB-60 signal: within 3200km (2000 miles) of Fort Collins Colorado.

WMR86 only - slide the **EU** / **UK** switch to the appropriate setting based on your location. Press **RESET** whenever you change the selected setting.

The reception icon will blink when it is searching for a signal. If the radio signal is weak it can take up to 24 hours to get a valid signal reception.

indicates the status of the clock reception signal.

ICON	MEANING
	Time is synchronized. Receiving signal is strong
	Time is not synchronized. Receiving signal is weak

To enable (and force a signal search) / disable the clock radio reception (clock synchronization):

1. Press **SELECT** to navigate to the Clock / Calendar / Moon Phase Area. ▶ will show next to the Area.
2. Press and hold **SEARCH**.

appears when it is enabled.

NOTE For best reception, the base station should be placed on a flat, non-metallic surface near a window in an upper floor of your home. The antenna should be placed away from electrical appliances and not be moved around when searching for a signal.

CLOCK / CALENDAR

To manually set the clock:

(You only need to set the clock and calendar if you have disabled the clock radio reception).

1. Press **SELECT** to navigate to the Clock Area. ▶ will show next to the Area.
2. Press and hold **MODE** to change the clock setting. The setting will blink.
3. Press ▲ / ▼ to increase / decrease the setting value.
4. Press **MODE** to confirm.
5. Repeat steps 3 to 4 to set the time zone offset hour (+ / -23 hours), 12 / 24 hour format, hour, minute, year, date / month format, month, date and weekday language.

NOTE If you enter +1 in the time zone setting, this will give you your regional time plus 1 hour.

If you are in the US (WMR86A only) set the clock to:

0 for Pacific time +1 for Mountain time

+2 for Central time +3 for Eastern time.

NOTE The weekday is available in English (E), German (D), French (F), Italian (I), Spanish (S) or Russian (R).

To change the clock display:

1. Press **SELECT** to navigate to the Clock Area. ▶ will show next to the Area.
2. Press **MODE** to toggle between:
   - Clock with Seconds
   - Clock with Weekday
   - Calendar

MOON PHASE

The Calendar must be set for this feature to work (see **Clock / Calendar** section).

	New Moon		Full Moon
	Waxing Crescent		Waning Gibbous
	First quarter		Third quarter
	Waxing Gibbous		Waning Crescent

AUTO SCANNING FUNCTION

To activate the outdoor temperature and humidity auto-scan function:

1. Press **SELECT** to navigate to the Temperature or Humidity Area. ▶ will show next to the Area.
2. Press and hold **MODE** to activate auto-scan. The temperature and humidity display will scroll from indoor to ch1 through to ch3.
3. Press any key to stop the auto-scan.

NOTE Channel 1 is used for the outdoor temperature and humidity sensor. Additional temperature and humidity sensors can use other channels.

WEATHER FORECAST

The weather display in the top part of the screen shows the current weather and the weather forecast for the next 12-24 hours within a 30-50 km (19-31 mile) radius.

Weather Forecast Area

ICON	DESCRIPTION
	Sunny
	Partly cloudy
	Cloudy
	Rainy
	Snowy

TEMPERATURE AND HUMIDITY

The weather station displays indoor and outdoor readings for:

1. Temperature / relative humidity (current / maximum / minimum)
2. Trend line
3. Wind chill (current / minimum) and dew point level (current / maximum / minimum)

The weather station can connect up to 3 remote sensors.

NOTE Channel 1 is dedicated for outdoor temperature and humidity.

shows which remote sensor's data you are viewing.

appears when indoor data is displayed.

The timestamp records the date and time when storing the temperature and humidity readings in memory.

To select the temperature measurement unit:

Press **UNIT** to select °C / °F.

NOTE The unit of all temperature related displays will be changed simultaneously.

To view temperature (Current / Min / Max temperature) readings:

1. Press **SELECT** to navigate to the Temperature Area. ▶ will show next to the Area.
2. Press ▲ / ▼ to select the channel.
3. Press **MAX / MIN** to toggle between current / MAX / MIN displays.

To view humidity (Humidity, Dew point) readings:

1. Press **SELECT** to navigate to the Humidity Area. ▶ will show next to the Area.
2. Press ▲ / ▼ to select the channel.
3. Press **MODE** repeatedly to toggle between the humidity / dew point displays.
4. Press **MAX / MIN** to toggle between current / MAX / MIN displays.

The timestamp is displayed accordingly in the Clock Area.

To clear the memories and timestamp for the temperature, humidity and dew point readings:

In the Temperature or Humidity Area, press and hold **MAX / MIN** to clear the readings.

NOTE The dew point advises at what temperature condensation will form.

TEMPERATURE AND HUMIDITY TREND

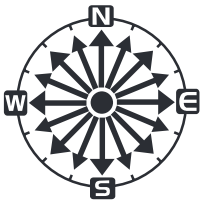
The trend lines are shown next to the temperature and humidity readings. The trend is shown as follows:

RISING	STEADY	FALLING
↗	→	↘

WIND CHILL / DIRECTION / SPEED

The base station provides wind speed and wind direction information.

To read the wind direction find the compass point the ↗ is pointing to.



The timestamp records the date and time when storing the wind speed readings.

To select the wind speed unit:

Press **UNIT** to switch between:

- Metres per second (**m / s**)
- Kilometers per hour (**kph**)
- Miles per hour (**mph**)
- Knots (**knots**)

The wind level is shown by a series of icons:

ICON	LEVEL	DESCRIPTION
	N/A	<2 mph (<4km/h)
	Light	2-8 mph (3~13 km/h)
	Moderate	9-25 mph (~14-41 km/h)
	Strong	26-54 mph (~42-87 km/h)
	Storm	>55 mph (>88 km/h)

To view the maximum wind speed and minimum wind chill readings:

1. Press **SELECT** to navigate to the Wind Speed / Wind Direction / Wind Chill Area. ▶ will show next to the Area.
2. Press **MAX / MIN** to toggle between current / MAX wind speed and current / MIN wind chill displays.

The timestamp is displayed accordingly in the Clock Area.

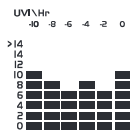
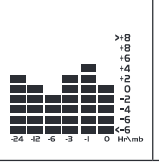
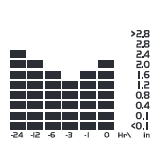
To clear minimum wind chill reading / maximum wind speed reading:

1. Press **SELECT** to navigate to the Wind Speed / Wind Direction / Wind Chill Area. ▶ will show next to the Area.
2. Press **MAX / MIN** repeatedly until minimum wind chill reading or maximum wind speed reading is displayed.
3. Press and hold **MAX / MIN** to clear the readings.

NOTE The wind chill factor is based on the combined effects of temperature and wind speed. Displayed wind chill is calculated solely from Channel 1 sensors.

UVI / BAROMETER / RAINFALL

The weather station works with one UV sensor and one rain gauge. The station is capable of storing and displaying the hourly history data for the last 10 hours of UV index, and 24 hours of rainfall and barometric pressure readings.

UVI	BAROMETER	RAINFALL
		

The bar chart display shows the current and historical data for the UV index, barometric pressure and rainfall readings.

NOTE The number shown in the horizontal axis (Hr) indicates how long ago each measurement was taken (e.g. 3 hours ago, 6 hours ago, etc.). The bar represents the measurement taken for that specific 1 hour period.

E.g., if it is 10:30 pm now, the bar plotted directly above -1 shows the reading recorded from 9 to 10 pm and -6 shows the reading recorded earlier in the evening, between 4pm-5pm.

To view the UV / Barometer / Rainfall readings:

1. Press **SELECT** to navigate to the UV / Barometer / Rainfall Area. ▶ will show next to the Area.
2. Press **MODE** to toggle between UVI / Barometer / Rainfall readings. The corresponding icon will appear:

UVI	BAROMETER	RAINFALL
UV	BARO	RAIN

To select the measurement unit for the barometer or rainfall readings:

In the UV / Barometer / Rainfall Area, press **UNIT** to switch between:

- Barometer: Millimeters of mercury (**mmHg**), inches of mercury (**inHg**), millibars per hectopascal (**mb**).
- Rainfall: Millimeters (**mm**), inches (**in**), recorded for that hour.

NOTE As the purpose of the bar graph is only to provide a quick comparison between the records of the past 24 hours, the vertical axis cannot convert from inches to mm. Therefore, changing the measurement unit will have no effect on the bar graph display.

UV INDEX

The UV index levels are as follows:

UV INDEX	DANGER LEVEL	ICON
0-2	Low	LOW
3-5	Moderate	MED
6-7	High	HI
8-10	Very high	V.HI
11 and above	Extremely high	EX.HI

To view the maximum UV reading:

1. Press **SELECT** to navigate to the UVI / Barometer / Rainfall Area. ▶ will show next to the Area.
2. Press **MODE** repeatedly to select UV display.
3. Press **MAX / MIN** to toggle between current / MAX UV index display.

The timestamp is displayed accordingly in the Clock Area.

To clear maximum UV reading:

1. Press **SELECT** to navigate to the UVI / Barometer / Rainfall Area. ▶ will show next to the Area.
2. Press **MODE** repeatedly to select UV display.
3. Press and hold **MAX / MIN** to clear the readings.

BAROMETER

To set the altitude level compensation for the Barometer readings:

1. Press **SELECT** to navigate to the UVI / Barometer / Rainfall Area. ▶ will show next to the Area.
2. Press **MODE** repeatedly to select Barometric display.
3. Press and hold **MODE** to enter the altitude setting.
4. Press ▲ / ▼ to increase / decrease the setting value.
5. Press **MODE** to confirm the setting.

RAINFALL

To view the recorded rainfall of the current hour or last 24 hours:

1. Press **SELECT** to navigate to the UVI / Barometer / Rainfall Area. ▶ will show next to the Area.
2. Press **MODE** repeatedly to select Rainfall display.
3. Press **MAX / MIN** repeatedly to toggle between current, past 24 hour rainfall.

BACKLIGHT

Press **LIGHT** to activate the backlight for 5 seconds.

RESET

Press **RESET** to return to the default settings.

SPECIFICATIONS

BASE STATION

Dimensions (L x W x H)	94 x 51 x 182.5 mm (3.7 x 2.0 x 7.2 inches)
Weight	241 g (8.5 oz) without battery
Battery	3 x UM-3 (AA) 1.5V

INDOOR BAROMETER

Barometer unit	mb, inHg and mmHg
Measuring range	700 – 1050mb/hPa
Accuracy	+/- 10 mb/hPa
Altitude setting	Sea level User setting for compensation
Weather display	Sunny, Partly Cloudy, Cloudy, Rainy and Snowy
Memory	Historical data and bar chart for last 24hrs

INDOOR TEMPERATURE

Temp. unit	°C / °F
Displayed range	-50°C to 70°C (-58°F to 158°F)
Operating range	0°C to 50°C (32°F to 122°F)
Accuracy	0°C - 40°C: +/- 1°C (+/- 2.0°F) 40°C - 50°C: +/- 2°C (+/- 4.0°F)
Memory	Current, Min and Max temp. Dew Point w/ Min and Max

INDOOR RELATIVE HUMIDITY

Displayed range	2% to 98%
Operating range	25% to 90%

Accuracy	25% - 40%: +/- 7% 40% - 80%: +/- 5% 80% - 90%: +/- 7%
Memory	Current, Min and Max

RADIO-CONTROLLED / ATOMIC CLOCK

Synchronization	Auto or disabled
Clock display	HH:MM:SS
Hour format	12hr AM/PM or 24hr
Calendar	DD/MM or MM/DD
Weekday in 5 languages	(E, D, F, I, S, R)

REMOTE WIND SENSOR UNIT

Dimensions (L x W x H)	178 x 76 x 214 mm (7 x 3 x 8.4 inches)
Weight	100 g (0.22 lbs) without battery
Wind speed unit	m/s, kph, mph, knots
Speed accuracy	2 m/s ~ 10 m/s (+/- 3 m/s) 10 m/s ~ 56 m/s (+/- 10%)
Direction accuracy	16 positions
Transmission of wind speed signal	Approx. every 56 seconds
Memory	Max wind speed
Battery	2 x UM-3 (AA) 1.5V batteries

OUTDOOR TEMPERATURE / HUMIDITY UNIT

Dimensions (L x W x H)	92 x 60 x 20 mm (3.6 x 2.4 x 0.79 in)
Weight	62 g (2.22oz) without battery
Humidity range	5% to 95%
Humidity accuracy	25% - 40%: +/- 7% 40% - 80%: +/- 5% 80% - 90%: +/- 7%
Temp. unit	°C / °F
Temperature outdoor range	-30°C to 60°C (-22°F to 140°F)
Temperature accuracy	-20°C to 0°C: +/- 2.0°C (+/- 4.0°F) 0°C to 40°C: +/- 1.0°C (+/- 2.0°F) 40°C to 50°C: +/- 2.0°C (+/- 4.0°F) 50°C to 60°C: +/- 3.0°C (+/- 6.0°F)
RF frequency	433MHz
Range	Up to 100 meters (328 feet) with no obstructions
Transmission	Approx. every 102 seconds
Channel no.	3
Batteries	2 x UM-4 (AAA) 1.5V

REMOTE RAIN GAUGE

Dimensions (L x W x H)	114 x 114 x 145 mm (4.5 x 4.5 x 5.7 inches)
Weight	241 g (0.54 lbs) without battery
Rainfall unit	Mm and in
Range	0 mm – 9999 mm
Accuracy	< 15 mm: +/- 1 mm 15 mm to 9999 mm: +/- 7%
Memory	Past 24hrs, hourly from last memory reset
Battery	2 x UM-3 (AA) 1.5V

PRECAUTIONS

- Do not subject the unit to excessive force, shock, dust, temperature or humidity.
- Do not cover the ventilation holes with any items such as newspapers, curtains etc.
- Do not immerse the unit in water. If you spill liquid over it, dry it immediately with a soft, lint-free cloth.
- Do not clean the unit with abrasive or corrosive materials.
- Do not tamper with the unit's internal components. This invalidates the warranty.
- Only use fresh batteries. Do not mix new and old batteries.
- Images shown in this manual may differ from the actual display.
- When disposing of this product, ensure it is collected separately for special treatment and not as household waste.
- Placement of this product on certain types of wood may result in damage to its finish for which Oregon Scientific will not be responsible. Consult the furniture manufacturer's care instructions for information.
- The contents of this manual may not be reproduced without the permission of the manufacturer.
- Do not dispose old batteries as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.
- Please note that some units are equipped with a battery safety strip. Remove the strip from the battery compartment before first use.

NOTE The technical specifications for this product and the contents of the user manual are subject to change without notice.

NOTE Features and accessories will not be available in all countries. For more information, please contact your local retailer.

ABOUT OREGON SCIENTIFIC

Visit our website (www.oregonscientific.com) to learn more about Oregon Scientific products. If you're in the US and would like to contact our Customer Care department directly, please visit: https://us.oregonscientific.com/service/support.asp

For international inquiries, please visit: http://us.oregonscientific.com/about/international.asp

EU DECLARATION OF CONFORMITY

Hereby, Oregon Scientific, declares that this Pro Weather Station (models: WMR86 / WMR86A) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A copy of the signed and dated Declaration of Conformity is available on request via our Oregon Scientific Customer Service.

COUNTRIES RTTE APPROVAL COMPLIED

All EU countries, Switzerland (CH)

and Norway (N)

FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

DECLARATION OF CONFORMITY

The following information is not to be used as contact for support or sales. Please visit our website at http://us.oregonscientific.com/service/ for all enquiries.

We

Name:	Oregon Scientific, Inc.
Address:	19861 SW 95th Ave.,Tualatin, Oregon 97062 USA
Telephone No.:	1-800-853-8883

declare that the product

Product No.:	WMR86 / WMR86A
Product Name:	Pro Weather Station
Manufacturer:	IDT Technology Limited
Address:	Block C, 9/F, Kaiser Estate, Phase 1, 41 Man Yue St., Hung Hom, Kowloon, Hong Kong

is in conformity with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference. 2) This device must accept any interference received, including interference that may cause undesired operation.

P/N:300102839-00004-10

Acumuladores estacionarios OPzS **Exide Classic Solar OPzS**

Almacenamiento de energía para aplicaciones energéticas excepcionales

La gama Classic OPzS Solar ha sido utilizada durante décadas en requerimientos de energía medios y grandes.

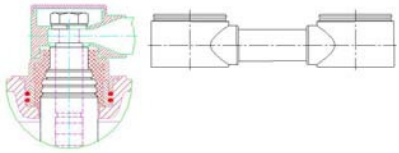
Este acumulador de energía es una batería de plomo-ácido de bajo mantenimiento con electrolito líquido.

Debido a su robustez, larga vida de diseño y alta fiabilidad, estas baterías son ideales para el uso en estaciones solares y eólicas, telecomunicaciones, compañías de distribución de energía, ferrocarriles y muchos otros suministros de energía de equipos de seguridad.

Características generales

- Placas tubulares.
- Capacidad nominal de hasta 4.600 Ah.
- Elementos de 2 Vcc.
- Densidad nominal (d_n) de 1,24 kg/l.
- Vida útil de 2.000 ciclos (según IEC 896-1).
- Bajo mantenimiento.
- Reciclables.

TERMINAL Y CONEXIÓN



Tornillo: M8

Conexión: flexible de 50 a 95 mm^2

Par de apriete: 20 Nm

DATOS Y CARACTERÍTICAS TÉCNICAS

Modelo	Estandar DIN	Tensión nominal	Capacidad C_{10} (Descarga hasta 1,80 V)	Capacidad C_{24} (Descarga hasta 1,80 V)	Capacidad C_{100} (Descarga hasta 1,85 V)	Medidas ancho x fondo x alto	Ancho instalada	Peso con ácido	Número de terminales
Solar 190	2 OPzS 100	2 Vcc	128 Ah	145 Ah	185 Ah	105 x 208 x 405 mm	115 mm	13,7 kg	1 + 1
Solar 245	3 OPzS 150	2 Vcc	169 Ah	190 Ah	240 Ah	105 x 208 x 405 mm	115 mm	15,2 kg	1 + 1
Solar 305	4 OPzS 200	2 Vcc	216 Ah	240 Ah	300 Ah	105 x 208 x 405 mm	115 mm	16,6 kg	1 + 1
Solar 380	5 OPzS 250	2 Vcc	267 Ah	300 Ah	370 Ah	126 x 208 x 405 mm	136 mm	20,0 kg	1 + 1
Solar 450	6 OPzS 300	2 Vcc	319 Ah	355 Ah	440 Ah	147 x 208 x 405 mm	157 mm	23,3 kg	1 + 1
Solar 550	5 OPzS 350	2 Vcc	391 Ah	430 Ah	540 Ah	126 x 208 x 520 mm	136 mm	26,7 kg	1 + 1
Solar 660	6 OPzS 420	2 Vcc	468 Ah	515 Ah	645 Ah	147 x 208 x 520 mm	157 mm	31,0 kg	1 + 1
Solar 765	7 OPzS 490	2 Vcc	545 Ah	600 Ah	750 Ah	168 x 208 x 520 mm	178 mm	35,4 kg	1 + 1
Solar 985	6 OPzS 600	2 Vcc	700 Ah	770 Ah	970 Ah	147 x 208 x 695 mm	157 mm	43,9 kg	1 + 1
Solar 1.080	7 OPzS 700	2 Vcc	772 Ah	845 Ah	1.055 Ah	147 x 208 x 695 mm	157 mm	47,2 kg	1 + 1
Solar 1.320	8 OPzS 800	2 Vcc	937 Ah	1.030 Ah	1.295 Ah	215 x 193 x 695 mm	225 mm	59,9 kg	2 + 2
Solar 1.410	9 OPzS 900	2 Vcc	1.009 Ah	1.105 Ah	1.380 Ah	215 x 193 x 695 mm	225 mm	63,4 kg	2 + 2
Solar 1.650	10 OPzS 1.000	2 Vcc	1.174 Ah	1.290 Ah	1.620 Ah	215 x 235 x 695 mm	225 mm	73,2 kg	2 + 2
Solar 1.990	12 OPzS 1.200	2 Vcc	1.411 Ah	1.550 Ah	1.950 Ah	215 x 277 x 695 mm	225 mm	86,4 kg	2 + 2
Solar 2.350	12 OPzS 1.500	2 Vcc	1.751 Ah	1.910 Ah	2.300 Ah	215 x 277 x 845 mm	225 mm	108,0 kg	2 + 2
Solar 2.500	14 OPzS 1.750	2 Vcc	1.854 Ah	2.015 Ah	2.445 Ah	215 x 277 x 845 mm	225 mm	114,0 kg	2 + 2
Solar 3.100	15 OPzS 1.875	2 Vcc	2.317 Ah	2.520 Ah	3.040 Ah	215 x 400 x 815 mm	225 mm	151,0 kg	3 + 3
Solar 3.350	16 OPzS 2.000	2 Vcc	2.523 Ah	2.740 Ah	3.280 Ah	215 x 400 x 815 mm	225 mm	158,0 kg	3 + 3
Solar 3.850	18 OPzS 2.250	2 Vcc	2.884 Ah	3.135 Ah	3.765 Ah	215 x 490 x 815 mm	225 mm	184,0 kg	4 + 4
Solar 4.100	20 OPzS 2.500	2 Vcc	3.090 Ah	3.355 Ah	4.000 Ah	215 x 490 x 815 mm	225 mm	191,0 kg	4 + 4
Solar 4.600	24 OPzS 3.000	2 Vcc	3.450 Ah	3.765 Ah	4.500 Ah	215 x 580 x 815 mm	225 mm	217,0 kg	4 + 4

SW7AA030M 30A,AC220V Servo Motor Driver, Servo Motor Driver factory.

SW7AA030M Servo Motor is a new generation of general-purpose servo motor driver, which is optimized and improved on the basis of QS6 series servo drivers. Adhering to the series QS6 series servo drivers excellent quality, more Reliable and more convenient. More mature and stable, rich and completely information. The servo driver add to 485 new communication functions, more convenient and reliable connection with the host PC and controller software.

Low-Inertia Series SW7AA030M 30A,AC220V Servo Motor Driver's Features

Fully retain the advantages characteristics of QS6 series servo driver.

AC sine wave control, torque smoothly and without pulsation. 2500 ppr incremental photoelectric encoder, high positioning accuracy, rotary positioning accuracy up 1/10000R.

Speed ratio up to 1:5000, from low speed to high speed torque characteristics are stable. High-speed arithmetic processing FPGA, maximum motor speed up to 5000r/Min. A rich completely set of parameters that can be configured to run different operating modes, so meet different demand.

Position, speed, torque control mode, using widely.

Adopt intelligent space vector control algorithm (SVPWM), could produce greater torque and less noise.

Up to three times the overload design, with a load capacity greater.

Perfect protection: over current, overvoltage, overheating and encoder failure, etc.

Perfect condition monitoring functions, such as the position error, motor speed, feedback pulse, command pulse and so on.

SW7AA030M 30A,AC220V Servo Motor Driver's Parameters.

Input Voltage	AC220V -15%～+10%
Driver Current	30A
Matching Motor	750W~1500W Servo Motor
Using Temperature	Work：45℃ Storage：-40℃～55℃
Relative Humidity	40%~80% with no condensation
Atmosphere	86-106kpa
Control Mode	1.Position control
	2.JOG control
	3.Speed control
	4.Torque control
	5.Position and speed control
	6.Inside pulse control
	7.Electric tool carrier control
Pulse Command	1.Pulse+ Direction
	2.CW + CCW Pulse
	3.Two-phase AB orthogonal pulses
Control Precision	0.01%
Response Frequency	≤200Hz
Pulse Frequency	≤500kHz
Speed Ratio	3,513888889
Regenerative Brake	Internally Installed
Electronic Gear	1/30000～30000/1
Overload Capacity	≤300%
Feedback Pulse	2500p/r, Frequency division can be set arbitrary within 0-128

Display Function	Motor speed, motor current, motor torque, motor position, the position deviation, the number of command pulses, the pulse frequency, the straight-line speed, input and output diagnostic
Protection Function	Over speed, over current, overvoltage, under voltage, overload, super bad, encoder fault, the temperature is too high, the internal chip failure, module failure

SW6AA050M2 50A,AC220V Servo Motor Driver, Servo Motor Driver factory.

SW6AA050M2 Servo Motor is a new generation of general-purpose servo motor driver, which is optimized and improved on the basis of SW6 series servo drivers. Adhering to the series SW6 series servo drivers excellent quality, more Reliable and more convenient. More mature and stable, rich and completely information. The servo driver add to 485 new communication functions, more convenient and reliable connection with the host PC and controller software.

Low-Inertia Series SW6AA050M2 50A,AC220V Servo Motor Driver's Features

Motor power: 100W~3.7KW (220V); 3.7W~11KW (380V)

Integrated with torque, speed, position, point-to-point positioning and composite switch function

Position control, speed control, torque control, electric tool holder control and JOG control are available

Embedded brake system satisfies the requirement of high load application

Four sections of positioning control instructions are embedded to enable free planning of point-to-point positioning control

The servo motor is integrated with coder, the position signals are fed back to the servo drive, constituting semi-closed loop control system with open loop position controller

The speed regulation ratio is 1:5000, ensuring stable torque characteristics from low speed to high speed

The control positioning precision is ±0.01%

The improved space vector control algorithm produces higher torque and lower noise than common SPWM

300% overload capacity ensures high loading capacity

Wide power supply adaptation: ~220V±20% or ~380V±20%

Perfect protection: over-current, over-voltage, over-heating and coder fault

Multiple display functions: motor rotation, motor current, motor position, position deviation, pulse quantity, pulse frequency, linear speed, I/O interface diagnosis, history warning log, etc.

SW6AA050M2 50A,AC220V Servo Motor Driver's Parameters

Parameter No.	Parameter name	Applicable mode	Parameter range	Default	Unit	Remark
PA-01	Control mode		1~6	1		Select the control mode of drive through this parameter
						1: Position control mode (SW5AA015B/20B/30B/20M/30M/50M)
						2: Analog speed control mode (SW5AA020M/30M);
						3: Speed trial control mode (SW5AA015B/20B/30B/20M/30M);
						4: JOG trial control mode (optional)
						5: I/O point control mode, ALR, CLE, INH select 8 speeds from PA51-58
						6: Torque control mode
						For position control mode, the position command inputs from pulse input port; for analog speed control mode, the speed command inputs from the PIN of input port and correspond to different speed according to positive and negative level (±10V); for speed trial mode, it runs in SPEEDTEST state; for JOG trial control mode, it runs in JOGTEST mode

PA-02	Speed loop ratio constant (mid-high speed)		10~1000	200		Speed loop ratio constant; set the ratio gain of speed loop adjuster through this parameter. The higher this value is, the higher the gain and system rigidity are. Please set the parameter value according to the load and default reference value of the drive. This parameter should be as high as possible under the condition that the system doesn't oscillate
PA-03	Speed loop integral constant (mid-high speed)		10~1000	100		Speed loop integral constant; set the integral time constant of speed loop adjuster through this parameter. The higher this value is, the higher the rigidity is. The higher the inertia is, the higher this value is. Please set the parameter value according to the load and default reference value of the drive. This parameter should be as high as possible under the condition that the system doesn't oscillate
PA-04	Acceleration time constant		6~1530	6	ms	Acceleration time constant; this value is the acceleration time of the motor from 0rpm to 1000rpm.
PA-05	Deceleration time constant		6~1530	6	ms	Deceleration time constant; this value is the deceleration time of the motor from 0rpm to 1000rpm

PA-06	Position loop gain	Position control	40~500	160		Position loop gain; this parameter is used to set the ratio gain of position loop adjuster. The higher this value is, the higher the gain and rigidity are. Under same frequency command pulse, the position delay is smaller. Too higher value may cause oscillation or overshoot.
PA-07	Position loop feedforward coefficient	Position control	0~100	10		Position loop feedforward coefficient; this parameter is used for feedforward gain adjustment of position loop. The higher this value is, the smaller the position delay is. The smaller this value is, the slower the response is.
PA-08	Default display contents		1~15	1		Default display contents; this parameter is used to set the default display content of the drive after power on.
PA-09	Position command pulse mode selection	Position control	1~2	1		Pulse mode selection; this parameter is used to set the default position loop pulse input mode of the drive. 1: command pulse + direction; 2: CW, CCW double-pulse
PA-10	Position command pulse direction reverse	Position control	1~2	1		Position command pulse direction reverse; this parameter is used to reverse the motor direction
PA-11	Position over tolerance detection range	Position control	1~3000	900	*10	

Easy setting: Real-time auto-tuning function machine characteristics is automatically measured to set necessary servo gain. Optimum setting can be obtained in a short time;

ALL-in-one control: Position, Speed , and Torque control can be selectively used by switching user parameters;

Harmonic suppression: DC reactor connectors are standard equipments to suppress power harmonic;

Built-in operator with six-digit indication LED: Setting and monitoring in work place are easy. Parameters can be set by using the built-in operator;

Vibration control: Vibration control functions, such as high-order torque command low-pass filter, broadband 2nd order notch filter, and vibration control observer provide high-response and low-vibration operation;

Positioning stabilization reduction: New speed controller is employed to substantially shorten the positioning stabilization time(1/5of existing model);

Command track control: A new position and speed controller is employed to improve the tracking ability of position control twice better than that of existing model. In addition, almost zero position deviation is achieved;

Test operation (JOG function): JOG function is installed to check the connection between motor and amplifier allowing easy test operation without inputting position and speed commands.

Imput Signals: Signal name	PIN No.	Function	Reference
+24VIN	9	Control power supply input for sequence signal: +24V power supply is provided by the user.Operative voltage range: +11V ~ +25V	4.2.4
SON	10	Servo ON input; after valid, receive control command in 50ms	4.5.2
INH	11	Command pulse prohibited	
FSTP	12	Prohibit forward rotation driving	4.1.2
RSTP	13	Prohibit reverse rotation driving	
ALR	14	Alarm clear: relieve servo alarm state	4.5.1
CLR	15	Reset signal input: clear deviation counting while position control	4.2.2
RIL	16	External limit input of forward rotation torque	4.1.3
FIL	17	External limit input of reverse rotation torque	4.1.3
VIN	19	Speed command input: ±10V	4.2.1
	20		
TIN	21	Torque command input: ±10V	4.2.8
	22		
CZ+	28	Programmable output	4.2.2
CZ-	29		

/PULS	24	Command pulse input, optical coupling isolation	Input mode	4.2.2
PULS	25		*Symbol + pulse	
/SIGN	26		*CCW/CW pulse	
SIGN	27			

Output signal:Signal name	PIN No.	Function		Reference
1	COIN-	Location complete signal output; when the signal deviation counter value is in specified location range, the location complete output is ON		
2	COIN+			
3	ALM+	Alarm output		4.5.1
4	ALM-			
5	RDY+	Servo ready output		
6	RDY-			
7	BRK+	Brake output		
8	BRK-			
PAO+	34	Phase A signal	2Two-phase pulse (phase A and B) conversion coder output signal and origin pulse (phase C) signal	4.2.3
PAO-	35	Phase B signal		
PBO+	32	Phase C signal		
PBO-	33			
PCO+	30			
PCO-	31			
FG	shell	If the shielded wire of the signal input/output cable is connected to connecter shell, it may be connected to frame earth wire. (earth wire)		

Inversor/cargador Quattro

3kVA - 10kVA compatibles con baterías de Litio-Ion

www.victronenergy.com

Quattro
48/5000/70-100/100

Quattro
24/3000/70-50/50

Dos entradas CA con conmutador de transferencia integrado

El Quattro puede conectarse a dos fuentes de alimentación CA independientes, por ejemplo a la toma de puerto o a un generador, o a dos generadores. Se conectará automáticamente a la fuente de alimentación activa.

Dos salidas CA

La salida principal dispone de la función "no-break" (sin interrupción). El Quattro se encarga del suministro a las cargas conectadas en caso de apagón o de desconexión de la red eléctrica/generador. Esto ocurre tan rápidamente (menos de 20 milisegundos) que los ordenadores y demás equipos electrónicos continúan funcionando sin interrupción.
La segunda salida sólo está activa cuando una de las entradas del Quattro tiene alimentación CA. A esta salida se pueden conectar aparatos que no deberían descargar la batería, como un calentador de agua, por ejemplo.

Potencia prácticamente ilimitada gracias al funcionamiento en paralelo

Hasta 6 unidades Quattro pueden funcionar en paralelo. Seis unidades 48/10000/140, por ejemplo, darán una potencia de salida de 54kW / 60 kVA y una capacidad de carga de 840 amperios.

Capacidad de funcionamiento trifásico

Se pueden configurar tres unidades para salida trifásica. Pero eso no es todo:6 grupos de tres unidades pueden conectarse en paralelo para lograr una potencia del inversor de 162kW / 180kVA y más de 2500 A de capacidad de carga

PowerControl – En casos de potencia limitada del generador, de la toma de puerto o de la red

El Quattro es un cargador de baterías muy potente. Por lo tanto, usará mucha corriente del generador o de la toma de puerto (16A por cada Quattro 5kVA a 230 VCA). Se puede establecer un límite de corriente para cada una de las entradas CA. Entonces, el Quattro tendrá en cuenta las demás cargas CA y utilizará la corriente sobrante para la carga de baterías, evitando así sobrecargar el generador o la red eléctrica.

PowerAssist – Refuerzo de la potencia del generador o de la toma de puerto

Esta función lleva el principio de PowerControl a otra dimensión, permitiendo que Quattro complemente la capacidad de la fuente alternativa. Cuando se requiera un pico de potencia durante un corto espacio de tiempo, como pasa a menudo, el Quattro compensará inmediatamente la posible falta de potencia de la corriente de la red o del generador con potencia de la batería. Cuando se reduce la carga, la potencia sobrante se utiliza para recargar la batería.

Energía solar: Potencia CA disponible incluso durante un apagón

El Quattro puede utilizarse en sistemas PV, conectados a la red eléctrica o no, y en otros sistemas eléctricos alternativos. Hay disponible software de detección de falta de suministro.

Configuración del sistema

- En el caso de una aplicación autónoma, si ha de cambiarse la configuración, se puede hacer en cuestión de minutos mediante un procedimiento de configuración de los conmutadores DIP.
- Las aplicaciones en paralelo o trifásicas pueden configurarse con el software VE.Bus Quick Configure y VE.Bus System Configurator.
- Las aplicaciones fuera de red, de la red interactiva y de autoconsumo que impliquen inversores conectados a la red y/o cargadores solares MPPT pueden configurarse con Asistentes (software específico para aplicaciones concretas).

Seguimiento y control in situ

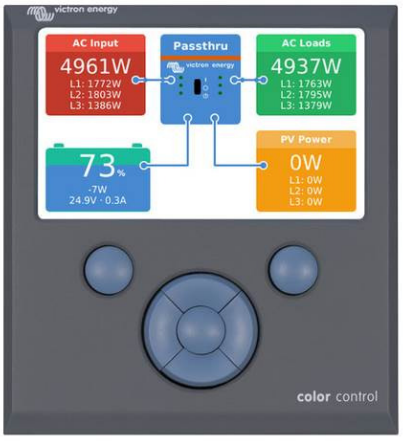
Hay varias opciones disponibles: Battery Monitor, Multi Control Panel, Ve.Net Blue Power panel, Color Control panel, smartphone o tableta (Bluetooth Smart), portátil u ordenador (USB o RS232).

Seguimiento y control a distancia

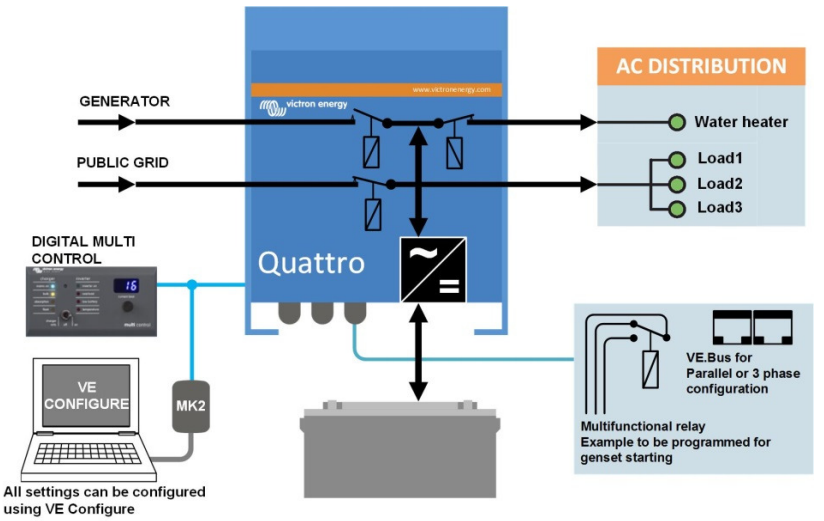
Victron Ethernet Remote, Victron Global Remote y el Color Control Panel.
Los datos se pueden almacenar y mostrar gratuitamente en la web VRM (Victron Remote Management).

Configuración a distancia

Se puede acceder y cambiar los ajustes de los sistemas con un panel Color Control si están conectados a Ethernet.



Panel Color Control con una aplicación PV



Quattro	12/3000/120-50/50 24/3000/70-50/50	12/5000/220-100/100 24/5000/120-100/100 48/5000/70-100/100	24/8000/200-100/100 48/8000/110-100/100	48/10000/140-100/100
PowerControl / PowerAssist	Sí			
Conmutador de transferencia integrado	Sí			
2 entradas CA	Rango de tensión de entrada: 187-265 VCA Frecuencia de entrada: 45 – 65 Hz Factor de potencia: 1			
Corriente máxima de alimentación (A)	2x 50	2x100	2x100	2x100
INVERSOR				
Rango de tensión de entrada (VCC)	9,5 – 17V 19 – 33V 38 – 66V			
Salida (1)	Tensión de salida: 230 VAC ± 2% Frecuencia: 50 Hz ± 0,1%			
Potencia cont. de salida a 25°C (VA) (3)	3000	5000	8000	10000
Potencia cont. de salida a 25ºC (W)	2400	4000	6500	8000
Potencia cont. de salida a 40ºC (W)	2200	3700	5500	6500
Potencia cont. de salida a 65ºC (W)	1700	3000	3600	4500
Pico de potencia (W)	6000	10000	16000	20000
Eficacia máxima (%)	93 / 94	94 / 94 / 95	94 / 96	96
Consumo en vacío (W)	20 / 20	30 / 30 / 35	45 / 50	55
Consumo en vacío en modo de ahorro (W)	15 / 15	20 / 25 / 30	30 / 30	35
Consumo en vacío en modo de búsqueda (W)	8 / 10	10 / 10 / 15	10 / 20	20
CARGADOR				
Tensión de carga de 'absorción' (V CC)	14,4 / 28,8	14,4 / 28,8 / 57,6	28,8 / 57,6	57,6
Tensión de carga de "flotación" (V CC)	13,8 / 27,6	13,8 / 27,6 / 55,2	27,6 / 55,2	55,2
Modo de almacenamiento (VCC)	13,2 / 26,4	13,2 / 26,4 / 52,8	26,4 / 52,8	52,8
Corriente de carga de la batería auxiliar (A) (4)	120 / 70	220 / 120 / 70	200 / 110	140
Corriente de carga de la batería de arranque (A)	4 (solo modelos de 12 y 24V)			
Sensor de temperatura de la batería	Sí			
GENERAL				
Salida auxiliar (A) (5)	25	50	50	50
Relé programable (6)	3x	3x	3x	3x
Protección (2)	a-g			
Puerto de comunicación VE.Bus	Para funcionamiento paralelo y trifásico, supervisión remota e integración del sistema			
Puerto de comunicaciones de uso general	2x	2x	2x	2x
On/Off remoto	Sí			
Características comunes	Temp. de trabajo: -40 to +65˚C Humedad (sin condensación): máx. 95%			
CARCASA				
Características comunes	Material y color: aluminio (azul RAL 5012) Categoría de protección: IP 21			
Conexión de la batería	Cuatro pernos M8 (2 conexiones positivas y 2 negativas)			
Conexión 230 V CA	Bornes de tornillo de 13 mm.² (6 AWG)	Pernos M6	Pernos M6	Pernos M6
Peso (kg)	19	34 / 30 / 30	45/41	45
Dimensiones (al x an x p en mm.)	362 x 258 x 218	470 x 350 x 280 444 x 328 x 240 444 x 328 x 240	470 x 350 x 280	470 x 350 x 280
ESTÁNDARES				
Seguridad	EN-IEC 60335-1, EN-IEC 60335-2-29, IEC 62109-1			
Emisiones / Inmunidad	EN55014-1, EN 55014-2, EN 61000-3-3, EN 61000-6-3, EN 61000-6-2, EN 61000-6-1			
Directiva de automoción	2004/104/EC			
Anti-isla	Visite nuestra página web			

1) Puede ajustarse a 60 Hz; 120 V 60 Hz si se solicita
2) Claves de protección:
   a) cortocircuito de salida
   b) sobrecarga
   c) tensión de la batería demasiado alta
   d) tensión de la batería demasiado baja
   h) temperatura demasiado alta
   f) 230 VCA en la salida del inversor
   g) ondulación de la tensión de entrada demasiado alta

3) Carga no lineal, factor de cresta 3:1
4) a 25º C de temperatura ambiente
5) Se desconecta sin hay fuente CA externa disponible
6) Relé programable que puede configurarse, entre otros, en alarma general, subtensión CC o señal de arranque/parada del generador
   Capacidad nominal CA 230V/4A
   Capacidad nominal CC 4A hasta 35VCC, 1A hasta 60VCC

Panel Digital Multi Control
Una solución práctica y de bajo coste para el seguimiento remoto, con un selector giratorio con el que se pueden configurar los niveles de PowerControl y PowerAssist.

Panel Blue Power
Se conecta a un Multi o a un Quattro y a todos los dispositivos VE.Net, en particular al controlador de baterías VE.Net. Representación gráfica de corrientes y tensiones.

Funcionamiento y supervisión controlados por ordenador
Hay varias interfaces disponibles:
- **Convertidor MK2.2 VE.Bus a RS232**
  Se conecta al puerto RS232 de un ordenador (ver "Guía para el VEConfigure")
- **Convertidor MK2-USB VE.Bus a USB**
  Se conecta a un puerto USB (ver Guía para el VEConfigure")
- **Convertidor VE.Net a VE.Bus**
  Interfaz del VE.Net (ver la documentación VE.Net)
- **Convertidor VE.Bus a NMEA 2000**
- **Victron Global Remote**
  El Global Remote es un módem que envía alarmas, avisos e informes sobre el estado del sistema a teléfonos móviles mediante mensajes de texto (SMS). También puede registrar datos de monitores de baterías Victron, Multi, Quattro e inversores en la web VRM mediante una conexión GPRS. El acceso a esta web es gratuito
- **Victron Ethernet Remote**
  Para conectar a Ethernet.
- **Panel Color Control panel (ver imagen en página 1)**
  Tras la pantalla LCD en color, un microordenador ejecuta un software de código abierto.
  El Color Control (CCGX) ofrece un control y monitorización intuitivos de todos los productos que se le conectan.
  La lista de productos Victron que pueden conectarse es interminable: Inversores, Multis, Quattros, todos nuestros más recientes cargadores solares MPPT, BMV-700, BMV-600, Lynx Ion + Derivador y más.
  La información puede enviarse a nuestra web gratuita de monitorización remota: el portal en línea VRM.

Monitor de baterías BMV-700
El monitor de baterías BMV-700 dispone de un avanzado sistema de control por microprocesador combinado con un sistema de alta resolución para la medición de la tensión de la batería y de la carga/descarga de corriente. Aparte de esto, el software incluye unos complejos algoritmos de cálculo, como la fórmula Peukert, para determinar con exactitud el estado de la carga de la batería. El BMV-700 muestra de manera selectiva la tensión, corriente, Ah consumidos o el tiempo restante de carga de la batería. El monitor también almacena una multitud de datos relacionados con el rendimiento y uso de la batería. Hay varios modelos disponibles (ver la documentación del monitor de baterías).

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E-mail: sales@victronenergy.com | **www.victronenergy.com**

Compact PLC series

CPM2C

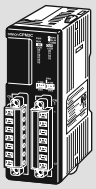
A versatile controller for up to 192 I/O points in an ultra-compact package

SYSMAC CPM2C

An extensive range of models assures efficient machine control in an ultracompact package. CPU Units (DC power supply only) are available with relay or transistor output, terminal block or various connector options, and an optional real-time clock function. Select the output type, number of I/O points and other specifications to meet your needs. Expansion I/O Units with 8 to 32 I/O points make it possible to configure a control system with a maximum of 192 I/O points.

CPU Units Depth: 65 mm

10 I/O Points



■Relay Output CPU Units
(Terminal-block type)
CPM2C-10CDR-D (No clock)
CPM2C-10C1DR-D (Clock)
●Input points: 6, DC input
●Output points: 4

■Transistor Output (Sink) CPU Units
(Connector type)
CPM2C-10CDTC-D (No clock)
CPM2C-10C1DTC-D (Clock)
(MIL-connector type)
CPM2C-10CDTM-D (No clock)
CPM2C-10C1DTM-D (Clock)

■Transistor Output (Source) CPU Units
(Connector type)
CPM2C-10CDT1C-D (No clock)
CPM2C-10C1DT1C-D (Clock)
(MIL-connector type)
CPM2C-10CDT1M-D (No clock)
CPM2C-10C1DT1M-D (Clock)
●Input points: 6, DC input
●Output points: 4

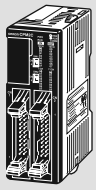
20 I/O Points

■Relay Output CPU Units
(Terminal-block type)
CPM2C-20CDR-D (No clock)
CPM2C-20C1DR-D (Clock)
●Input points: 12, DC input
●Output points: 8

■Transistor Output (Sink) CPU Units
(Connector type)
CPM2C-20CDTC-D (No clock)
CPM2C-20C1DTC-D (Clock)
(MIL-connector type)
CPM2C-20CDTM-D (No clock)
CPM2C-20C1DTM-D (Clock)

■Transistor Output (Source) CPU Units
(Connector type)
CPM2C-20CDT1C-D (No clock)
CPM2C-20C1DT1C-D (Clock)
(MIL-connector type)
CPM2C-20CDT1M-D (No clock)
CPM2C-20C1DT1M-D (Clock)
●Input points: 12, DC input
●Output points: 8

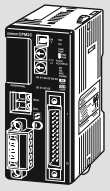
32 I/O Points



■Transistor Output (Sink) CPU Units
(Connector type)
CPM2C-32CDTC-D (No clock)
(MIL-connector type)
CPM2C-32CDTM-D (No clock)

■Transistor Output (Source) CPU Units
(Connector type)
CPM2C-32CDT1C-D (No clock)
(MIL-connector type)
CPM2C-32CDT1M-D (No clock)
●Input points: 16, DC input
●Output points: 16

Programmable DeviceNet Slaves



■Transistor Output (Sink)
CPU Unit
(Connector type)
CPM2C-S100C-DRT (Clock)

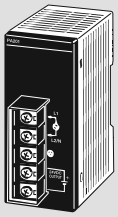
■Transistor Output (Source)
CPU Unit
(Connector type)
CPM2C-S110C-DRT (Clock)
●Input points: 6, DC input
●Output points: 4

CPU Units with CompoBus/S Master Function

■Transistor Output (Sink)
CPU Unit
(Connector type)
CPM2C-S100C (Clock)

■Transistor Output (Source)
CPU Unit
(Connector type)
CPM2C-S110C (Clock)
●Input points: 6, DC input
●Output points: 4

AC Power Supply Unit



CPM2C-PA201
●100- to 240-V AC input
●24-V AC/600-mA output

Analog I/O Units

CPM2C-MAD11
- Analog inputs: 2 (Resolution: 6,000)
- Analog output: 1 (Resolution: 6,000)

Temperature Sensor Units

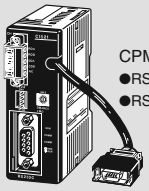
CPM2C-TS001
- Thermocouple inputs: 2

CPM2C-TS101
- Platinum-resistance thermometer inputs: 2

CompoBus/S I/O Link Unit

CPM2C-SRT21
- I/O Link inputs: 8
- I/O Link outputs: 8

Simple Communications Unit



CPM2C-CIF21
- RS-485 component connection
- RS-232C

Adapters

■Peripheral/ RS-232C Adapter
CPM2C-CIF01-V1

■RS-422/RS-485 + RS-232C Adapter
CPM2C-CIF11

Expansion I/O Units Depth: 65 mm

Input/Output Expansion I/O Units

■Relay Output I/O Unit (Terminal-block type)
CPM2C-10EDR
- Input points: 6, DC input
- Output points: 4

■Relay Output I/O Unit (Terminal-block type)
CPM2C-20EDR
- Input points: 12, DC input
- Output points: 8

■Transistor Output (Sink) I/O Unit (Connector type)
CPM2C-24EDTC
■Transistor Output (Source) I/O Unit (Connector type)
CPM2C-24EDT1C
■Transistor Output (Sink) I/O Unit (MIL-connector type)
CPM2C-24EDTM
■Transistor Output (Source) I/O Unit (MIL-connector type)
CPM2C-24EDT1M
- Input points: 16, DC input
- Output points: 8

■Transistor Output (Sink) I/O Unit (Connector type)
CPM2C-32EDTC
■Transistor Output (Source) I/O Unit (Connector type)
CPM2C-32EDT1C
■Transistor Output (Sink) I/O Unit (MIL-connector type)
CPM2C-32EDTM
■Transistor Output (Source) I/O Unit (MIL-connector type)
CPM2C-32EDT1M
- Input points: 16, DC input
- Output points: 16

Input Expansion I/O Units

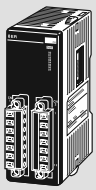
CPM2C-8EDC

(Connector type)
CPM2C-8EDC
(MIL-connector type)
CPM2C-8EDM
- Input points: 8, DC input

CPM2C-16EDC

(Connector type)
CPM2C-16EDC
(MIL-connector type)
CPM2C-16EDM
- Input points: 16, DC input

Output Expansion I/O Units



■Relay Output I/O Unit (Terminal-block type)
CPM2C-8ER
- Output points: 8

■Transistor Output (Sink) I/O Unit (Connector type)
CPM2C-8ETC
■Transistor Output (Source) I/O Unit (Connector type)
CPM2C-8ET1C
■Transistor Output (Sink) I/O Unit (MIL-connector type)
CPM2C-8ETM
■Transistor Output (Source) I/O Unit (MIL-connector type)
CPM2C-8ET1M
- Output points: 8

■Transistor Output (Sink) I/O Unit (Connector type)
CPM2C-16ETC
■Transistor Output (Source) I/O Unit (Connector type)
CPM2C-16ET1C
■Transistor Output (Sink) I/O Unit (MIL-connector type)
CPM2C-16ETM
■Transistor Output (Source) I/O Unit (MIL-connector type)
CPM2C-16ET1M
- Output points: 16

Specifications

General

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
Supply voltage	24 V DC					
Operating voltage range	20.4 to 26.4 V DC					
Power consumption (Add Expansion Unit consumption from following tables.)	4 W	3 W	4 W	3 W	3 W	3 W
Inrush current	25 A max.					
Insulation resistance	20 MΩ min. (at 500 V DC) between isolated circuits					
Dielectric strength	2,300 V AC for 1 min (between isolated circuits)					
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)					
Vibration resistance	Conforming to IEC 60068-2-6, JIS C0040: 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)					
Shock resistance	Conforming to IEC 60068-2-27, JIS C0041: 147 m/s^2 three times each in X, Y, and Z directions					
Ambient temperature	Operating: 0° to 55°C Storage: –20° to 75°C (except for the battery)					
Humidity	10% to 90% (with no condensation)					
Atmosphere	Must be free from corrosive gas					
I/O interface	Terminal block	Connector	Terminal block	Connector		
Power interrupt time	2 ms min.					
Weight	200 g max.	200 g max.	250 g max.	200 g max.	200 g max.	160 g max.
	Expansion I/O Unit with 10 I/O points (relay outputs)			200 g max.		
	Expansion I/O Unit with 20 I/O points (relay outputs)			200 g max.		
	Expansion I/O Units with 24 I/O points (transistor outputs)			200 g max.		
	Expansion I/O Unit with 32 I/O points (transistor outputs)			200 g max.		
	Expansion I/O Unit with 8 input points			150 g max.		
	Expansion I/O Unit with 16 input points			150 g max.		
	Expansion I/O Units with 8 output points (transistor outputs)			150 g max.		
	Expansion I/O Units with 16 output points (transistor outputs)			150 g max.		
	Expansion I/O Unit with 8 output points (relay outputs)			200 g max.		
	Simple Communications Unit			150 g max.		
	Peripheral/RS232C Adapter Unit			150 g max.		
	RS422/RS232C Adapter Unit			150 g max.		
	AC Power Supply Unit			250 g max.		
	Analog I/O Unit			200 g max.		
	Temperature Sensor Unit			200 g max.		
	CompoBus/S I/O Link Unit			150 g max.		

CPM2C Power Consumption

Use the following power consumption tables to calculate the total power capacity required when using a CPM2C PLC. The rated output for the CPM2C-PA201 AC Power Supply Unit is 15 W. Any surplus power not required for the PLC directly can be used as service power supply for sensors and other devices.

CPU Unit	Power consumption (W)
CPM2C-10C(1)DR-D	4
CPM2C-20C(1)DR-D	4
CPM2C-S1□0C-DRT1	3
CPM2C-S1□0C	3
CPM2C-10C(1)DT(1)□-D	3
CPM2C-20C(1)DT(1)□-D	3
CPM2C-32C(1)DT(1)□-D	3

The power consumption of the CPU Unit includes power for the Programming Consoles and Adapter Units.

Add the following consumptions when using Expansion I/O Units.

Expansion I/O Unit	Power consumption (W)
CPM2C-10EDR	1
CPM2C-20EDR	2
CPM2C-24EDT(1)□	1
CPM2C-32EDT(1)□	1
CPM2C-MAD11	3.5
CPM2C-SRT21	1
CPM2C-TS001/002	1.5
CPM2C-8ED□/16ED□	1
CPM2C-8ER	2
CPM2C-8ET(1)□/16ET(1)□	1

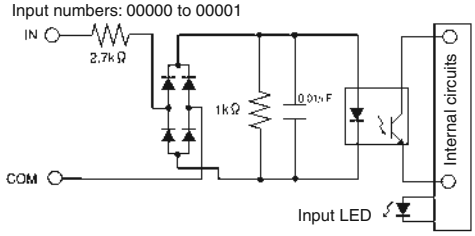
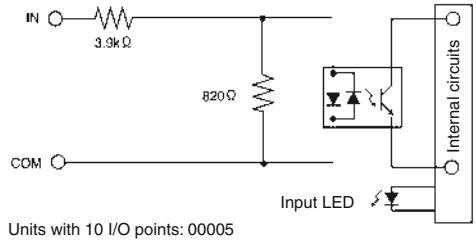
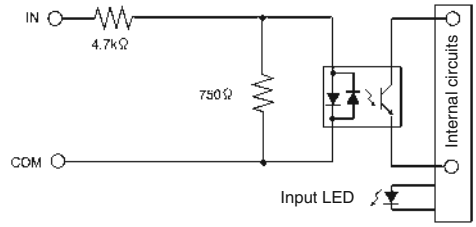
CPM2C Characteristics

Item		CPU Unit Specification					
		CPU Units with 10 I/O points (relay outputs)	**CPU Units with 10 I/O points (transistor outputs)**	**CPU Units with 20 I/O points (relay outputs)**	**CPU Units with 20 I/O points (transistor outputs)**	**CPU Units with 32 I/O points (transistor outputs)**	**CPM2C-S CPU Unit with 10 I/O points (transistor outputs) and CompoBus/S Master function**
Control method		Stored program method					
I/O control method		Cyclic scan with direct output (Immediate refreshing can be performed with IORF(97).)					
Programming language		Ladder diagram					
Instruction length		1 step per instruction, 1 to 5 words per instruction					
Instructions		Basic instructions: 14 Special instructions:105 instructions, 185 variations					
Execution time		Basic instructions: 0.64 μs (LD instruction) Special instructions:7.8 μs (MOV instruction)					
Program capacity		4,096 words					
I/O capacity	CPU Unit only	10 points		20 points		32 points	10 points
	With Expansion I/O Units	170 points max.		180 points max.		192 points max.	362 points max. (106 local + 256 remote)
Input bits		IR 00000 to IR 00915 (Words not used for input bits can be used for work bits.)					
Output bits		IR 01000 to IR 01915 (Words not used for output bits can be used for work bits.)					
CompoBus/S input bits		---					128 inputs: IR 02000 to IR 02715 (I/O bits not used for I/O be used as work bits.)
CompoBus/S output bits		---					128 outputs: IR 03000 to IR 03715
Work bits		928 bits:IR 02000 to IR 04915 (Words IR 020 to IR 049) and IR 20000 to IR 22715 (Words IR 200 to IR 227)					672 bits: IR 02800 to IR 02915 (Words IR 028 to IR 029), IR 03800 to IR 04915 (Words IR 038 to IR 049)and IR 20000 to IR 22715 (Words IR 200 to IR 227
Special bits (SR area)		448 bits: SR 22800 to SR 25515 (Words SR 228 to SR 255)					
Temporary bits (TR area)		8 bits (TR0 to TR7)					
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (Words HR 00 to HR 19)					
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (Words AR 00 to AR 23)					
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)					
Timers/Counters		256 timers/counters (TIM/CNT 000 to TIM/CNT 255) 1-ms timers: TMHH(—) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(—) Decrementing counters: CNT Reversible counters: CNTR(12)					
Data memory		Read/Write: 2,048 words (DM 0000 to DM 2047)* Read-only: 456 words (DM 6144 to DM 6599) PC Setup: 56 words (DM 6600 to DM 6655) *The Error Log is contained in DM 2000 to DM 2021.					
CompoBus/S master functions		---		---			Connects to up to 32 slaves with up to 256 I/O link points
DeviceNet slave functions		---		---			DeviceNet remote I/O link (DRT model only) Up to 1,024 I/O link points Explicit messages Read/write of specified areas from PLC with Master Unit
Basic interrupts	Interrupt processing	2 interrupts	2 interrupts	4 interrupts	4 interrupts	4 interrupts	2 interrupts
		Shared by the external interrupt inputs (counter mode) and the quick-response inputs.					
	Interval timer interrupts	1 (Scheduled Interrupt Mode or Single Interrupt Mode)					
High-speed counter	High-speed counter	One high-speed counter: 20 kHz single-phase or 5 kHz two-phase (linear count method) Counter interrupt: 1 (set value comparison or set-value range comparison)					
High-speed counter	Interrupt inputs (Counter mode)	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the quick-response inputs.					
	Counter interrupts	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the quick-response inputs.					
Pulse output		Two points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control. One point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz, and direction control. Two points with variable duty-ratio outputs (using PWM(—)). (Pulse outputs can be used with transistor outputs only, they cannot be used with relay outputs.)					
Synchronized pulse control		One point: A pulse output can be created by combining the high-speed counter with pulse outputs and multiplying the frequency of the input pulses from the high-speed counter by a fixed factor. (This output is possible with transistor outputs only, it cannot be used with relay outputs.)					
Quick-response inputs		2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the interrupt inputs (counter mode). Min. input pulse width: 50 μs max.					
Input time constant (ON response time = OFF response time)		Can be set for all input points. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms)					
Clock function		Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup)					

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs) and CompoBus/S Master function
Communications functions	Peripheral port: Supports Host Link, peripheral bus, no-protocol, or Programming Console connections. RS-232C port: Supports Host Link, no-protocol, 1:1 Slave Unit Link, 1:1 Master Unit Link, or 1:1 NT Link connections. A CPM2C-CN111, CS1W-CN114, or CS1W-CN118 Connecting Cable, or an Interface Unit (CPM2C-CIF01-V1 or CPM2C-CIF11) is required to connect to the CPM2C's communications port.					
Memory protection	HR area, AR area, program contents, read/write DM area contents, and counter values are maintained during power interruptions.					
Memory backup	Flash memory: Program, read-only DM area, and PC Setup Memory backup: The read/write DM area, HR area, AR area, and counter values are backed up. With CPU Units that are equipped with a clock, the battery will backup memory for 2 years at 25°C. With CPU Units that are not equipped with a clock, if a battery is not installed, the internal capacitor will backup memory for 10 days at 25°C. If a battery (optional CPM2C-BAT01 Battery) is installed, it will backup memory for 5 years at 25°C.					
Self-diagnostic functions	CPU Unit failure (watchdog timer), I/O bus error, battery error, and memory failure					
Program checks	No END instruction, programming errors (checked when operation is started)					

CPM2C I/O Specifications

1. CPU Unit Input Specifications

Item	Specifications			Circuit configuration
	Units with 10 I/O points	Units with 20 I/O points	Units with 32 I/O points	
Input voltage	24 V DC $^{+10\%}_{-15\%}$			Input numbers: 00000 to 00001  Units with 10 I/O points: 00002 to 00004 Units with 20/32 I/O points: 00002 to 00006  Units with 10 I/O points: 00005 Units with 20 I/O points: 00007 to 00011 Units with 32 I/O points: 00007 to 00011, 00100 to 00107 
Input impedance	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00004: 3.9 kΩ IN00005: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007 and up: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007: 4.7 kΩ IN00100 to IN00107: 4.7 kΩ	
Input current	IN00000 to IN00001: 8 mA IN00002 to IN00004: 6 mA IN00005: 5 mA	IN00000 to IN00001: 8 mA IN00002 to IN00006: 6 mA IN00007 and up: 5 mA	IN00000 to IN00001: 8 mA IN00002 to IN00006: 6 mA IN00007: 5 mA IN00100 to IN00107: 5 mA	
ON voltage/ current	IN00000 to IN00001:17 V DC min., 5 mA IN00002 and up:14.4 V DC min., 3.5 mA			
OFF voltage/ current	5.0 V DC max., 1.1 mA			
ON delay	1 to 80 ms max. Default: 10 ms (See note.)			
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)			

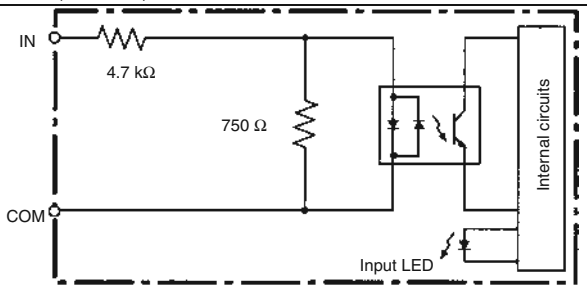
Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

High-speed Counter Inputs
The following CPU Unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

Interrupt Inputs
CPM2C PCs have inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 μs.
In CPU Units with 10 I/O points, inputs IN00003 and IN00004 can be used as interrupt inputs. In CPU Units with 20 or 32 I/O points, inputs IN00003 through IN00006 can be used as interrupt inputs.

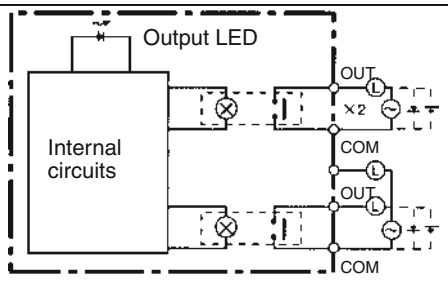
2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 V DC $^{+10\%}_{-15\%}$
Input impedance	4.7 kΩ
Input current	5 mA
ON voltage/current	14.4 V DC min., 3.5 mA
OFF voltage/current	5.0 V DC max., 1.1 mA
ON delay	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

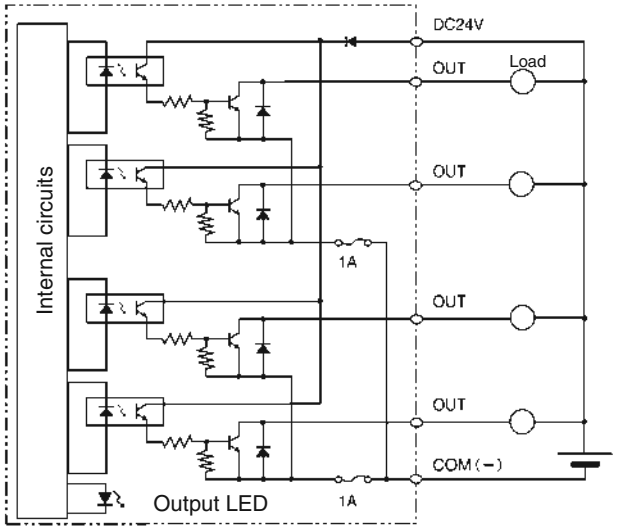
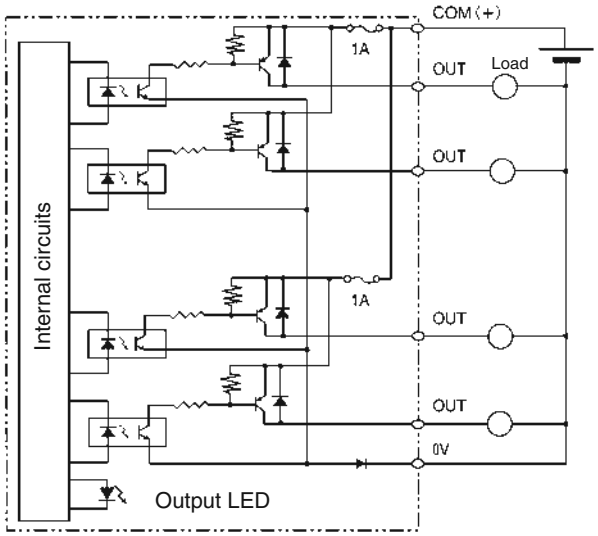
3. CPM2C Output Specifications (CPU Units and Expansion I/O Units)

Relay Output

Item	Specification
Max. switching capacity	2 A, 250 V AC (cosϕ = 1) 2 A, 24 V DC (4 A/common)
Min. switching capacity	10 mA, 5 V DC
Service life of relay	Electrical:150,000 operations (24- V DC resistive load) 100,000 operations (240- V AC inductive load, cosϕ = 0.4) Mechanical:20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	

Transistor Outputs (Sinking or Sourcing) for CPU Units and Expansion I/O Units

Item	Specification
Max. switching capacity	CPU Units with 10 or 20 I/O Points 01000 to 01007: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) CPU Units with 32 I/O Points 01000 to 01007: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) 01100 to 01107: 40 mA at 4.5 V DC to 100 mA at 20.4 V DC, 100 mA (20.4 to 26.4 V) (See note.) Expansion I/O Units 01□00 to 01□07: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) 01□08 to 01□15: 40 mA at 4.5 V DC to 100 mA at 20.4 V DC, 100 mA (20.4 to 26.4 V) (See note.)
Min. switching capacity	0.5 mA
Max. inrush current	0.9 A for 10 ms (charging and discharging waveform)
Leakage current	0.1 mA max.
Residual voltage	0.8 V max.
ON delay	OUT01000 and OUT01001:20 μs max. OUT01002 and up:0.1 ms max.
OFF delay	OUT01000 and OUT01001:40 μs max. for 4.5 to 26.5 V, 10 to 300 mA 0.1 ms max. for 4.5 to 30 V, 0.5 to 10 mA OUT01002 and up:1 ms max.
Fuse	1 fuse for each 2 outputs (The fuse cannot be replaced by the user.)

Item	Specification
Circuit configuration	**Sinking Outputs**  **Sourcing Outputs** 

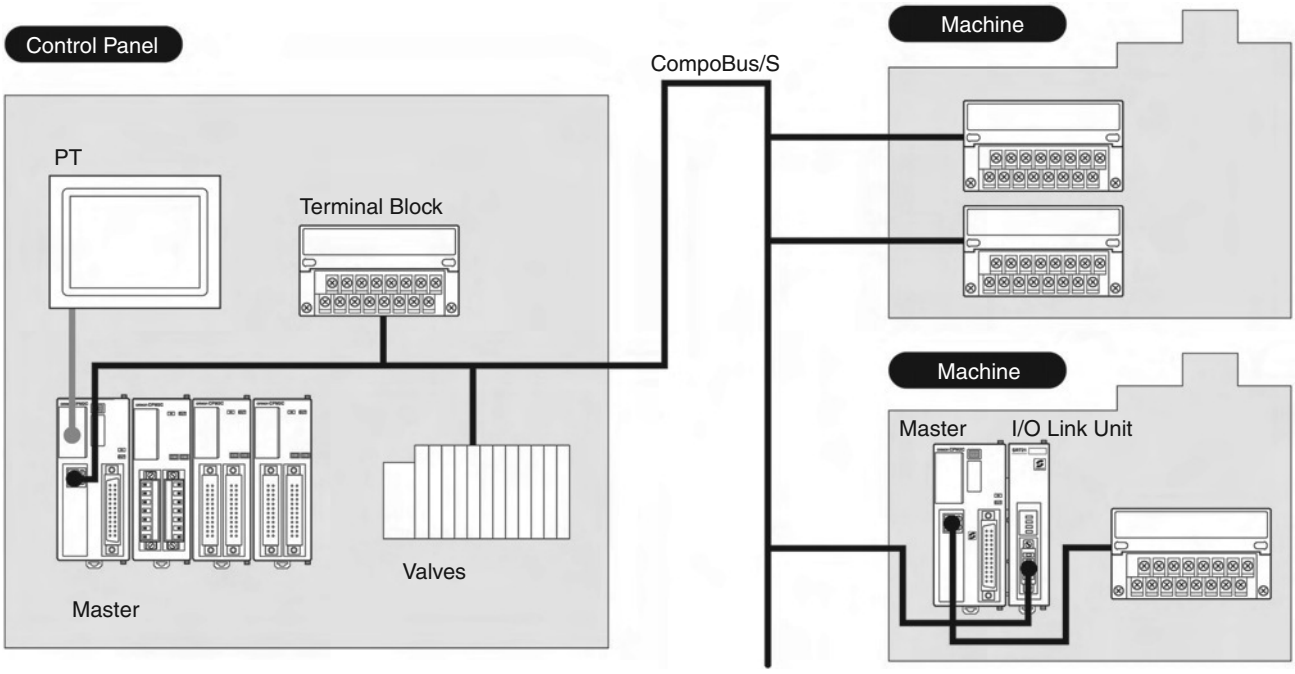
Note: Connect dummy resistance as required and maintain the load current between 10 and 150 mA when using 01000 and 01001 for pulse outputs. The ON/OFF response time will increase if the load current is below 10 mA, preventing outputting high-speed pulses. The transistors will heat if the output current is greater than 150 mA, possibly destroying the elements.

CPM2C-S1□0C

CPU Units with CompoBus/S Master

Ultra-compact CPM2C CPU unit with CompoBus/S master offering high speed remote I/O communication.

- The compact design makes this unit ideal for local control applications.
  At 40 x 90 x 65 mm (W x H x D) with 10 I/O points and CompoBus/S master offering versatile expandability it is possible to fullfill constrol systems needs.
- A large number of expansion I/O points reduces system construction cost.
  Up to three Expansion Up to three expansion terminals can be connected to the CPU unit.
  Furthermore, CompoBus/S remote I/O terminals can be used for expansion I/O points.
  Not only in-panel wiring but also external wiring is simplified. The miniaturization of the control panel reduces cable, terminal block, and wiring cost.
- Easy system designing, modification, and expansion by CompoBus/S remote I/O terminals.
  With this high-speed communication bus and no complicated wiring they can be used as expansion terminal blocks with minimal modifications to the system layout as long as room for expansion is reserved at the first designing stage.
- A calendar/clock ensures timed machine control, including data collection and error logs with date and time stamps.



Ordering Information

Unit		Inputs	Outputs	Clock	Model
10 points (6 inputs/4 outputs)	Connector model	6 points at 24 V DC	4 transistor sinking outputs	Yes	CPM2C-S100C
			4 transistor sourcing outputs	Yes	CPM2C-S110C

Specifications

General Specifications

Item		Specification
Control method		Stored program method
I/O control method		Cyclic scan method (Immediate refreshing can be performed with IORF(97).)
Programming language		Ladder diagram
Instruction length		1 step per instruction 1 to 5 words per instruction
Instructions	Basic instructions	14
	Special instructions	105 instructions, 185 variations
Execution time	Basic instructions	0.64 μs (LD instruction)
	Special instructions	7.8 μs (MOV instruction)
Program capacity		4,096 words
Max. I/O capacity		CPU Unit only: 10 points Expansion I/O Unit: 96 points (32-point Expansion I/O Unit x 3) (Up to 3 Expansion Units can be connected.) CompoBus/S: 256 points (362 points in total)
Input bits		IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)
Output bits		IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)
CompoBus/S input bits		128 bits: IR 02000 to IR 02715 (words IR 020 to IR 027)
CompoBus/S output bits		128 bits: IR 03000 to IR 03715 (words IR 030 to IR 037)
Work bits		672 bits:IR 02800 to IR 02915 (words IR 028 to IR 029) IR 03800 to IR 03915 (words IR 038 to IR 039) IR 04000 to IR 04915 (words IR 040 to IR 049) IR 20000 to IR 22715 (words IR 200 to IR 227)
Special bits (SR area)		440 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
Temporary bits (TR area)		8 bits: (TR 0 to TR 7)
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (words HR 00 to HR 19)
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (words AR 00 to AR 23) These include CompoBus/S slave status flags (words AR 04 to AR 07).
Link bits (LR area)		256 points: LR 0000 to LR 1515 (words LR 00 to LR 15)
Timers/Counters		256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH (--) 10-ms timers: TIMH (15) 100-ms timers TIM 1-s/10-s timers: TIML (--) Decrementing counters: CNT Reversible counters: CNTR (12)
Data memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021.
	Read only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
Basic interrupt functions	Interrupt inputs	2 interrupts (Used for both counter mode interrupts inputs and quick-response inputs.
	Scheduled interrupts	1 interrupt
High-speed counter functions	High-speed counters	1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
	Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
	Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs		2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.
Pulse output		2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz with direction control: or 2 points with variable duty-ratio outputs
Synchronized pulse control		1 point
Input time constant (ON response time = OFF response time)		Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock		Equipped with clock (built-in RTC)
Communications functions		Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.
Power failure backup function		Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.
Memory backup		Non-volatile (flash) memory: Program, read-only DM area, and PC Setup
		Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values
Self-diagnostic functions		CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program check		No END instruction, programming errors (checked when operation is started)

Item		Specification
Programming devices	Programming Console	C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	CX-One	Windows 2000 / XP

Note: Connecting Cable (CPM2C-CN111, CS1W-CN114, or CS1W-CN118) is required to connect to the communications peripheral /RS-232C port.

Communications Specifications

Communications method		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Combination of multi-drop method and T-branch connections (see note 1)
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps (see note 2)
Communications cycle time	High-speed Communications Mode	0.5 ms (with 8 input and 8 output slaves connected)
		0.8 ms (with 16 input and 16 output slaves connected)
	Long-distance Communications Mode	4.0 ms (with 8 input and 8 output slaves connected)
		6.0 ms (with 16 input and 16 output slaves connected)
Communications media		2-conductor cable (VCTF 0.75 x 2), 4-conductor cable (VCTF 0.75 x 4), or Special Flat Cable
Communications distance	High-speed Communications Mode	2-conductor VCTF cable: Main line length:100 m max. Branch line length:3 m max. Total branch line length:50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length:30 m max. Branch line length:3 m max. Total branch line length:30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance Communications Mode	2-conductor VCTF cable: Main line length:500 m max. Branch line length:6 m max. Total branch line length:120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Maximum number of nodes		32
Error control checks		Manchester code check, frame length check, and parity check

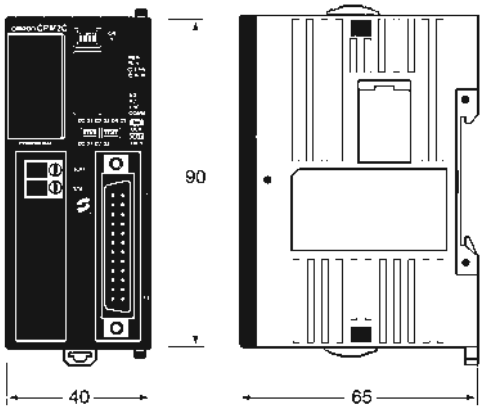
Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The baud rate is switched using DM settings (default setting is 750 kbps).

Dimensions

Note: All units are in millimeters unless otherwise indicated.

CPM2C-S100C
CPM2C-S110C



Note: Refer to *CPM2C-S Programmable Controller Operation Manual* (W377) for detailed specifications.

CPM2C-S1□0C-DRT

Programmable Slave PLC

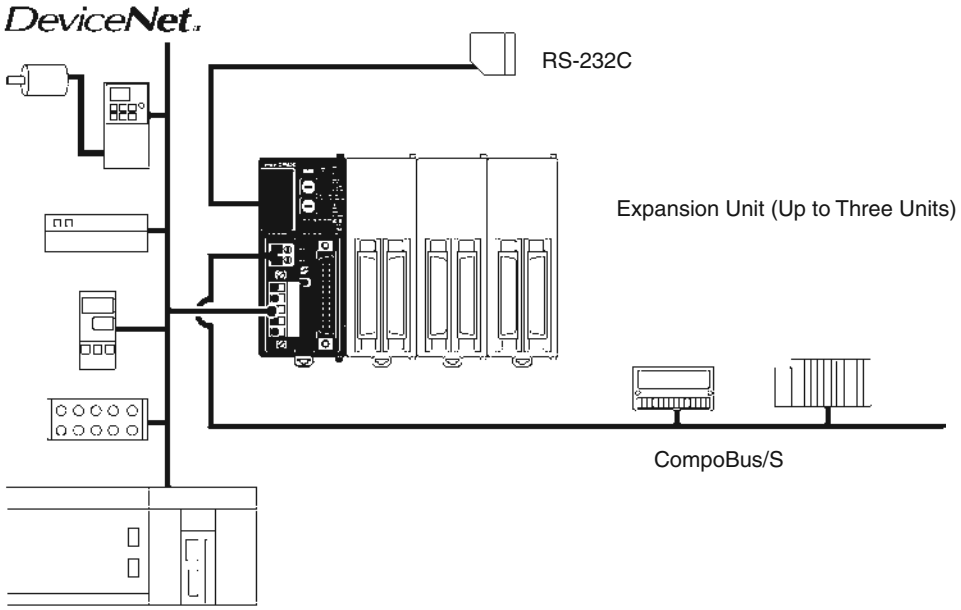
Multi-functional programmable slave for distributed control

A part of an installation consisting of sensors, actuators and control is handled as one DeviceNet slave.

The distribution of device control enables the production of standard units with standardized programs and decreasing the load on the system master PLC. Conventional distributed I/O control networks do not allow I/O checks or operation checks until all devices on the networks are assembled and connected. Programmable slaves, however, allow I/O and operation checks

on any distributed unit independently.

- DeviceNet slave functionality
  Supports multi-word I/O links and explicit message communication, making it possible for the master to control the data of all the slaves on the network. Data that does not need immediate transmission, such as log data, can be transmitted in blocks using explicit message communication.
- CompoBus/S master functionality
  Connects to remote signal lights, pushbutton switches, terminal blocks, and pneumatic valves from other companies over VCTF or easy-to-branch flat cable.
- RS-232C Communications
  Barcodereaders and PTs can be connected to serial port. The data then will be processed locally and thus reduces the load on the central controlling PLC.
- Expansion unit (Up to three units)
  A wide variaty of different expansion units is available to fit the application needs.



Ordering Information

Unit		Inputs	Outputs	Clock	Model
10 points (6 inputs/4 outputs)	Connector model	6 points at 24 V DC	4 transistor sinking outputs	Yes	CPM2C-S100C-DRT
			4 transistor sourcing outputs	Yes	CPM2C-S110C-DRT

Specifications

General Specifications

Item		Specification
Control method		Stored program method
I/O control method		Cyclic scan method (Immediate refreshing can be performed with IORF(97).)
Programming language		Ladder diagram
Instruction length		1 step per instruction 1 to 5 words per instruction
Instructions	Basic instructions	14
	Special instructions	105 instructions, 185 variations
Execution time	Basic instructions	0.64 μs (LD instruction)
	Special instructions	7.8 μs (MOV instruction)
Program capacity		4,096 words
Max. I/O capacity		CPU Unit only: 10 points Expansion I/O Unit: 96 points (32-point Expansion I/O Unit x 3) (Up to 3 Expansion Units can be connected.) CompoBus/S: 256 points (362 points in total)
Input bits		IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)
Output bits		IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)
CompoBus/S input bits		128 bits: IR 02000 to IR 02715 (words IR 020 to IR 027)
CompoBus/S output bits		128 bits: IR 03000 to IR 03715 (words IR 030 to IR 037)
Work bits		672 bits:IR 02800 to IR 02915 (words IR 028 to IR 029) IR 03800 to IR 03915 (words IR 038 to IR 039) IR 04000 to IR 04915 (words IR 040 to IR 049) IR 20000 to IR 22715 (words IR 200 to IR 227)
Special bits (SR area)		440 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
Temporary bits (TR area)		8 bits: (TR 0 to TR 7)
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (words HR 00 to HR 19)
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (words AR 00 to AR 23) These include CompoBus/S slave status flags (words AR 04 to AR 07).
Link bits (LR area)		256 points: LR 0000 to LR 1515 (words LR 00 to LR 15)
Timers/Counters		256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH (--) 10-ms timers: TIMH (15) 100-ms timers TIM 1-s/10-s timers: TIML (--) Decrementing counters: CNT Reversible counters: CNTR (12)
Data memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021.
	Read only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
DeviceNet slave functions		DeviceNet Remote I/O Link No. of I/O Link points: 1,024 max. Explicit message communications Any PC data area can be accessed from the master.
Basic interrupt functions	Interrupt inputs	2 interrupts (Used for both counter mode interrupts inputs and quick-response inputs.
	Scheduled interrupts	1 interrupt

Item			Specification
High-speed counter functions	High-speed counters		1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
		Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)		2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
		Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs			2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.
Pulse output			2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz and 10 kHz with no direction control: or 2 points with variable duty-ratio outputs
Synchronized pulse control			1 point
Input time constant (ON response time = OFF response time)			Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock			Equipped with clock (built-in RTC)
Communications functions			Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.
Power failure backup function			Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.
Memory backup			Non-volatile (flash) memory: Program, read-only DM area, and PC Setup
			Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values
Self-diagnostic functions			CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program check			No END instruction, programming errors (checked when operation is started)
Programming devices	Programming Console		C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	CX-One		Windows 2000 / XP

Note: Connecting Cable (CPM2C-CN111, CS1W-CN114, or CS1W-CN118) is required to connect to the communications peripheral /RS-232C port.

Communications Specifications

DeviceNet

Communications protocol		DeviceNet
Connection form		Combination of multi-drop and T-branch connections (see note 1)
Baud rate		500, 250, or 125 kbps (switchable)
Communications media		Special 5-conductor cable (2 signal lines, 2 power supply lines, and 1 shield line)
Communications distance	Baud rate	500 kbps: Max. network length (see note 2):100 m max. (see note 3) Main line length:6 m max. Total branch line length:39 m max. 250 kbps: Max. network length (see note 2):250 m max. (see note 3) Main line length:6 m max. Total branch line length:78 m max. 125 kbps: Max. network length (see note 2):500 m max. (see note 3) Main line length:6 m max. Total branch line length:156 m max.
Max. number of connecting nodes		64 (63 slaves and 1 master)
Error control checks		CRC error, node address duplication check, and scan list verification

Note: 1. A terminator must be connected to both ends of the trunk line.

2. The maximum network length is the lenght of the trunk line.

3. When Thin Cable is used for the main line, the main line must be 100 m or less in length.

CompoBus/S

Communications method		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Combination of multi-drop method and T-branch connections (see note 1)
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps (see note 2)
Communications cycle time	High-speed Communications Mode	0.5 ms (with 8 input and 8 output slaves connected)
		0.8 ms (with 16 input and 16 output slaves connected)
	Long-distance Communications Mode	4.0 ms (with 8 input and 8 output slaves connected)
		6.0 ms (with 16 input and 16 output slaves connected)
Communications media		2-conductor cable (VCTF 0.75 x 2), 4-conductor cable (VCTF 0.75 x 4), or Special Flat Cable
Communications distance	High-speed Communications Mode	2-conductor VCTF cable: Main line length:100 m max. Branch line length:3 m max. Total branch line length:50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length:30 m max. Branch line length:3 m max. Total branch line length:30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance Communications Mode	2-conductor VCTF cable: Main line length:500 m max. Branch line length:6 m max. Total branch line length:120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Maximum number of nodes		32
Error control checks		Manchester code check, frame length check, and parity check

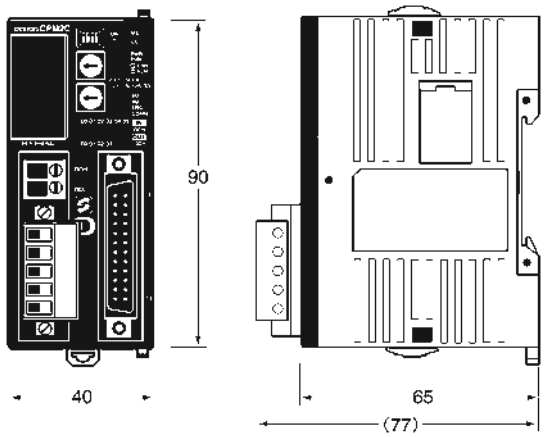
Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The baud rate is switched using DM settings (default setting is 750 kbps).

Dimensions

Note: All units are in millimeters unless otherwise indicated.

CPM2C-S100C-DRT
CPM2C-S110C-DRT

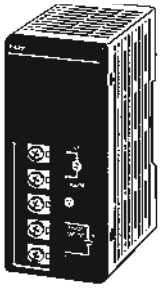


Note: Refer to *CPM2C-S Programmable Controller Operation Manua*l (W377) for detailed specifications.

CPM2C-PA201

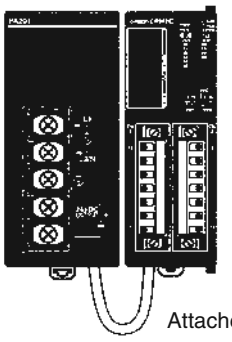
AC Power Supply Unit

- The CPM2C-PA201 is a slim and compact AC Power Supply Unit of the same shape as the CPM2C's CPU Unit. It can be connected simply using the connecting cable (23 cm) provided. It can also be used for CPM1A and CPM2A CPU Units and as display power supply (wired by the user).



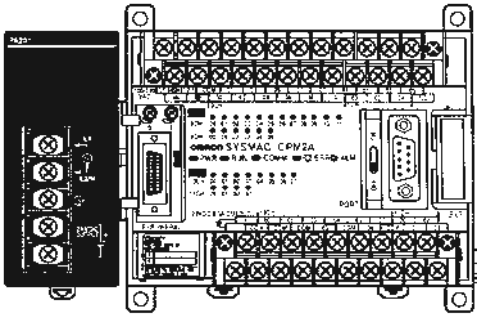
Service power supply for external devices such as sensors (24 V).

AC Power Supply Unit



Attached connecting cable

AC Power Supply Unit



Specifications

Item			Specification
Rated output			15 W
Output voltage			24 V
Output current			600 mA
Efficiency			75% min. (at rated output)
Input conditions	Rated voltage		100 to 240 V AC
	Allowable voltage range		85 to 264 V AC
	Frequency		47 to 63 Hz
	Current	100 V	0.4 A
		200 V	0.2 A
	Leakage current	100 V	0.5 mA max. (at rated output)
		200 V	1 mA max. (at rated output)
	Inrush current	100 V	15 A max. (at 25°C cold start)
		200 V	30 A max. (at 25°C cold start)
Output characteristics	Output voltage accuracy		10%/–15% (including input, load, and temperature fluctuations)
	Minimum output current		30 mA
	Ripple noise voltage		2% (p-p) max.
	Input fluctuation		0.75% max.
	Load fluctuation		4% max.
	Temperature fluctuation		0.05%/°C max.
	Startup time		300 ms max. (at input voltage of 100 V AC or 200 V AC and the rated output)
	Output hold time		10 ms (at input voltage of 100 V AC or 200 V AC and the rated output)
Overcurrent protection			Self-resetting, operates at 105% to 335% of the rated current, suspended and independent operation
Overvoltage protection			None
Ambient operating temperature			0° to 55°C
Ambient storage temperature			–20° to 70°C (no condensation or icing)
Ambient operating humidity			10% to 90% (no condensation)
Dielectric strength			2,000 V for 1 min between all inputs and GR Leakage current: 10 mA 3,000 V for 1 min between all inputs and all outputs Leakage current: 10 mA 1,000 V for 1 min between all outputs and GR Leakage current: 10 mA
Insulation resistance			100 MΩ min. at 500 V DC between all outputs and any input, and between all outputs and GR
Vibration resistance			10 to 57 Hz, amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes according (Time coefficient: 8 minutes × coefficient factor 10 = total time 80 min.)
Shock resistance			147 m/s^2 3 times each in X, Y, and Z directions
Noise terminal voltage			FCC class A
Weight			250 g max.

CPM2C-MAD11

Analog I/O Unit

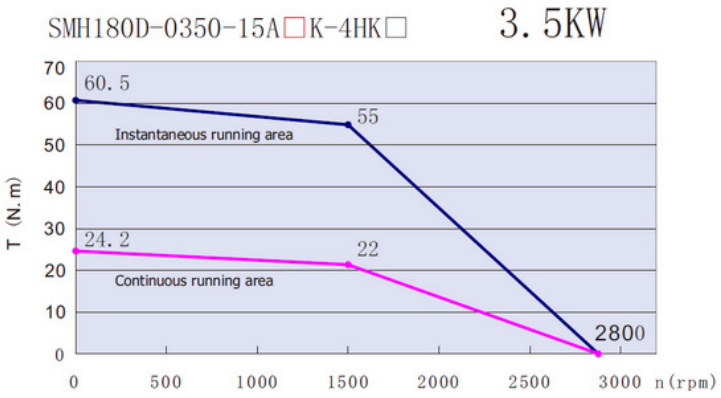
- Up to four CPM2C-MAD11 Analog I/O Units can be connected to the CPM2C. Each Unit provides 2 analog inputs and 1 analog output, i.e., up to 8 analog inputs and 4 analog outputs can be supported by one CPM2C.
- Example Application: Packaging Machines

Specifications

Item		Voltage I/O	Current I/O
Analog inputs	Number of inputs	2 (allocated 2 words)	
	Input signal ranges	0 to 5 V, 1 to 5 V, 0 to 10 V, –10 to 10 V	0 to 20 mA, 4 to 20 mA
	Maximum rated input	±15 V	±30 mA
	External input impedance	1 MΩ min.	Approx. 250 Ω
	Resolution	1/6,000 (full scale)	
	Overall precision	25°C:±0.3% of full scale	25°C:±0.4% of full scale
		0 to 55°C:±0.6% of full scale	0 to 55°C:±0.8% of full scale
	Converted A/D data	Binary data (4-digit hexadecimal) –10 to 10 V: F448 to 0BB8 Hex full scale Other:0000 to 1770 Hex full scale	
	Averaging	Supported (set for each input with DIP switch)	
	Disconnected line detection	Supported	
Analog output	Number of outputs	1 (allocated 1 word)	
	Output signal ranges	1 to 5 V, 0 to 10 V, –10 to 10 V	0 to 20 mA, 4 to 20 mA
	External output allowed load resistance	1 kΩ min.	600 Ω max.
	External output impedance	0.5 Ω max.	---
	Resolution	1/6,000 (full scale)	
	Overall precision	25°C:±0.4% of full scale	
		0 to 55°C:±0.8% of full scale	
	D/A data setting	Binary data (4-digit hexadecimal) –10 to 10 V: F448 to 0BB8 Hex full scale Other:0000 to 1770 Hex full scale	
Conversion time		2 ms/point (6 ms/all analog I/O)	
Isolation method		Photocoupler isolation between analog I/O and internal circuits. (Individual analog I/O signals are not isolated.)	
Power consumption		3.5 W	
Weight		200 g max.	

Kinco Servo motor SMH180D-0350-15A□K-4HKC

Torque Curve

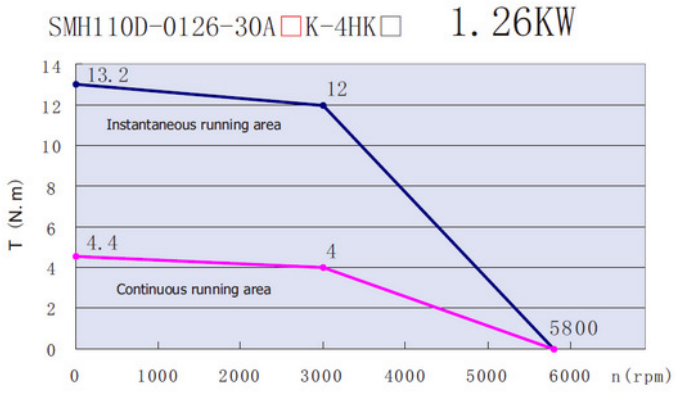


Technical Specifications	
DC link voltage UDC	560
Rated power PN(W)	3500
Rated torque TN(Nm)	22
Rated speed nN(rpm)	1500
Rated current IN(A)	10.3
Maximum torque Tm(Nm)	55
Maximum current Im(A)	25.75
Standstill torque TS(Nm)	24.2
Standstill current IS(A)	11.33
Resistance line-line RL(Ω)	1.2
Inductance line-line LL(mH)	12.7(AVG)
Electrical time constant τe(ms)	10.58
Mechanical time constant τm(ms)	3.42
Reverse voltage constant Ke(V/krpm)	135
Torque constant Kt(Nm/A)	2.23

Rotor moment of inertia Jm(Kg·cm2)	82
Pole pair number	4
Maximum voltage rising du/dt(KV/μs)	8
Insulation class	F
Maximum radial force F(N)	1600
Maximum axial force F(N)	800
Weight G(Kg)	22.7
Length of motor L(mm)	260±1.5
Position feedback device	Incremental encoder 2500ppr
Cooling method	Totally enclosed, non-ventilated
Protection level	IP65 for body, shaft sealing IP54
Temperature	-20℃～40℃ (Non-freezing)
Humidity	Below 90% RH (Non-condensing)
Ambient enviroment	Away from active gas, combustible gas, oil drops and dust
Altitude	Maximum altitude 4000m, Rated power at 1000m or below, Above 1000m: Decreasing 1.5% per 100m rise

Kinco Servo motor SMH110D-0126-30A□K-4HKC

Torque Curve



Technical Specifications	
DC link voltage UDC	560
Rated power PN(W)	1260
Rated torque TN(Nm)	4.0
Rated speed nN(rpm)	3000
Rated current IN(A)	4.3
Maximum torque Tm(Nm)	12
Maximum current Im(A)	12.9
Standstill torque TS(Nm)	4.4
Standstill current IS(A)	4.73
Resistance line-line RL(Ω)	1.83
Inductance line-line LL(mH)	13.5
Electrical time constant τe(ms)	7.37
Mechanical time constant τm(ms)	1.63
Reverse voltage constant Ke(V/krpm)	64
Torque constant Kt(Nm/A)	1.058
Rotor moment of inertia Jm(Kg·cm2)	5.8
Pole pair number	4

Maximum voltage rising du/dt(KV/μs)	8
Insulation class	F
Maximum radial force F(N)	630
Maximum axial force F(N)	315
Weight G(Kg)	6.2
Length of motor L(mm)	168
Position feedback device	Incremental encoder 2500ppr
Cooling method	Totally enclosed, non-ventilated
Protection level	IP65 for body, shaft sealing IP54
Temperature	-20℃～40℃ (Non-freezing)
Humidity	Below 90% RH (Non-condensing)
Ambient enviroment	Away from active gas, combustible gas, oil drops and dust
Altitude	Maximum altitude 4000m, Rated power at 1000m or below, Above 1000m: Decreasing 1.5% per 100m rise